



THE UNIVERSITY

OF ILLINOIS

LIBRARY

720.5

ARB

v.35

AMERICAN LIBRARY

LIBRARY

The person charging this material is responsible for its return to the library from which it was withdrawn on or before the **Latest Date** stamped below.

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

BUILDING 3 ONLY
MAR 3 1975

FEB 20 1986

FEB 10 1986

AUG 20 1992

MAY 20 1993

1912

VOLUME
THIRTY-FIVE.

1926
4
W.F.D.
JANUARY—
JUNE

THE ARCHITECTS' & BUILDERS' JOURNAL.

*A Weekly Journal for Architects Surveyors
Builders and Constructional Engineers.*

It is our aim, our ambition, our aspiration even, to build our Journal worthily and well, not for the hour only, but for future years; for the few men in the forefront of an enduring and a laborious art; for the disciplined ranks of a distinguished profession; for the young men—Architects to be—and for all who love a clustered column or a flying buttress, a traceried window or a Greek frieze; for the man, too, who honestly plumbs a jamb.

CAXTON HOUSE, WESTMINSTER

CONTENTS.

See also Concrete and Steel Section.

ABATEMENT, SMOKE, 341.

Academy, Royal, Church Architecture at the, 519.

Acanthus, The Greek, 269.

Acoustics, Architectural, 547, 550.

Adam Period Fireplace, 179.

Additions to Clifton College Chapel, 420.

Adverse Criticism of "Neo-Grec," 371.

Advertisement, Art and, 590.

Advertisements, The Control of, 339.

Alpine Club, 72.

Altar Rails from Lancashire, Early Renaissance, 152.

Amalgamated Building Workers' Union, 589.

American Architecture from the British Point of View, 299.

American Architectural Omniscience, 267.

American Institute of Architects, 62.

Ancient Monuments, 590; Preservation of, 651; Protection of, 470.

Anglo-Indian Ideas of Architectural Competition, 192.

Apartment Houses, Paris, 64.

Apollo Palatinus, The Temple of, 33.

Architect: and the Penalty Clause, 50, 66; and the Public, 291; Fame and the, 523; Poseur, 651; Position of the, 192.

Architects: and Furniture, 625; Clients, and Contractors, 649; of the Day (Warwick and Hall, A.A.R.I.B.A.), 342; (W. and E. Hunt), 497.

Architects Signing Their Buildings, 574.

Architects' Benevolent Society, 424.

Architects' Fees, 580.

Architecture and Painting, 111; at the Paris Salon, 493; at the Royal Academy, 571; Colour as Applied to, 120; Considered in Relation to Music, 318; Hopes and Fears for, 249; London, in Relation to Roads and Bridges, 3; of the New Delhi, 444; at the Royal Academy, 467; Patriotism in, 350; True Hope for, 241.

Architectural Acoustics, 547, 550.

Architectural Association, Drawings at the, 496; Secretary, The New, 248; Sketchbook, 394; Visits, 69, 156.

Architectural Association of Ireland, 155.

Architectural Competition, Anglo-Indian Ideas of, 192.

Architectural Design, Copyright in, 220.

Architectural Drawing, 163, 470.

Architectural Education in England and America, 83.

Art Museums and Picture Galleries, Planning, 374.

Art and Advertisement, 580.

Art of the Etcher, 265.

Art of the Plasterer, 593.

Art Study, The Cambridge Slade Professor on, 574.

Association for Consulting Engineers, New, 14.

Australian Capital, 484.

Autographs of Great Painters, 317.

Automatic Fire Extinction, 12.

Aviation and the Structures of the Future, 635.

Awakening of London, 369.

Awards, The Soane, 164.

BACKWARD BY-LAWS, 33.

Bankruptcy Proceedings, 567.

Barber, Mr. Donn, on the Ethics of Competitions, 378.

"Baroque" and "Rococo," The meaning of, 29.

Basilica Plan for Churches, 316.

Bav Window, West Mills, Newbury, 666.

Belgian Scaffolding Practice, 659.

Bell-frames in Church Towers, 291.

Benevolent Society, Architects', 424.

Bill, Public Offices (Sites), 412.

Birmingham Council House Extension, 278.

Birmingham, King Edward VI. School for Girls, 632.

Birmingham University Town Planning Lectures, 186.

Boilers, The Care of, 46.

Book Reviews: "Lockwood's Price Book" (Miller), 99; "Romanesque Architecture in France" (Baum), 137; "The Manufacture of Varnishes, etc." (Geddes), 172; "The Natural History of Clay" (Searle), 172; "Smoke Prevention and Fuel Economy" (Booth), 172; "Ship Wiring and Fitting" (Johnson), 172; "Pocket Notes and Remembrances for Sanitary Inspectors, etc." (Cowderoy), 172; "Builders' Quantities" (Lewis), 172; "Spon's Architects' and Builders' Pocket Price Book and Memoranda," 208;

"Drainage Work and Sanitary Fittings" (Maxwell), 208; "Architecture" (Lethaby), 240; "Should We Stop Teaching Art?" (Ashbee), 258; "Architectural Hygiene" (Fletcher), 258; "Canterbury Cathedral" (Seager), 258; "Artistic Stencilling" (Audsley), 258; "Pompeian Decorations" (Briggs), 266; "A Manual of Public Health Law" (Jacobs), 278; "Our Homeland Churches and How to Study Them" (Heath), 278; "Theory and Practice in Structural Design" (Adams), 288; "L'Architecture Religieuse en France à l'époque Romane" (de Lasteyrie), 365; "A French Manual of Reinforced Concrete" (Salember), 462; "An Elementary Manual of Reinforced Concrete" (Andrews), 463; "The Insurance Act and Yourself," 515; "Columns and Struts" (Alexander), 515; "The West Country," 515; "The Town Planning Review," 615; "New 'Homeland' Guides," 615; "House Painting and Decoration" (Jennings), 615; "The Techniques of Painting" (Battus), 615; "School Planning" (Robson), 623; "Mechanics of Building Construction" (Adams), 632; "Modern Practical Design" (Rhead), 652; "Farm Buildings" (Curtis), 666; "Problems in Engineering" (Turner), 665.

Bradford Operating Theatres, 411.

Brevities, 414.

Brick and Stone Pediments in London, 50.

Brickworks, State, 666.

Bridge: at Newbury, 73; Kingston, 4; Lambeth, The Proposed, 264; Portinscale, and the Grouting Machine, 413, 501; Reinforced Concrete, Witley, Surrey, 490; Richmond, Proposed New, 626.

Bridges: A Conversation on, 205; Iron versus Stone, 317; Picturesqueness of, 190.

British Museum, The New, and Its Neighbourhood, 215.

British Point of View, American Architecture from the, 299.

Budapest, Some Notable Buildings in, 385.

Builders and the Insurance Act, 585.

Builders' Affairs, 620.

Builders' Business on Co-Operative Lines, 556.

Builders' Clerks' Benevolent Institution Dinner, 360.

Builders' Foremen's Association Dinner, 134.

Builders' Hours in the Middle Ages, 39.

Building: A Century of, 255; Construction and Fire Hazard, 472; Construction Plant, a Novelty in, 664; Estate, a New, 32; Interests in South Africa, 184, 380, 619; Labour, The Cost of, 457; Line, Question of, 556; Scheme, an Extensive, 594.

Building Trade Dispute, London, 631.

Fortunes and Misfortunes in the, 651; Labour Unrest in the, 406; in New South Wales, 358.

Building Trades: Agreement, London, 626; Association, Ipswich; Employers' Association, 588; Exhibition, Manchester 260; What is Wanted in the, 34, 63, 85, 142.

Buildings at Cambridge, New, 6.

Buildings on Small Holdings, Committee of Inquiry as to, 248.

Burlington Fine Arts Club, 62, 522.

Burlington House, Loan Exhibition at, 6.

Business Opportunities in South Africa, Supp. June 26.

Byfleet, Rural Housing at, 77.

By-law Relaxation, The Problem of, 521.

By-laws, Backward, 33.

By-laws in Rural Districts, 589.

CAMBRIDGE, NEW BUILDINGS AT, 6.

Cambridge, New Slade Professor at, 590.

Cambridge Slade Professor on Art Study, 574.

Cape Dutch House, 575.

Cape Town and South African Architecture, Supp. June 26.

Capital City, The Projected

Australian, 484, 666.

Care of Boilers, 46.

Carnarvon Castle, 62.

Catalogues, Standardisation of, 615.

Ca'edral, Liverpool, Erection of, 143.

Cathedral, Southwark, 6, 66.

Cavity Walls, 11-in., 308.

Cement, Putty Lime in, 51.

Cements for Pointing in Exposed

Situations, 50.

Central Heating and Power Plant, 326.

Century of Building, 255.

Chair of Town Planning, Proposed, 573.

Champneys, Basil, 241.

Cheap Cottages, 289, 316.

Christchurch Priory, 316.

Church Architecture at the Royal Academy, 519.

Church, Epom Parish, 529.

Church of St. Boniface, St. Budeaux, 586.

Church Towers, Bell-frames in, 291.

Churches at Haarlem and The Hague, 373.

City Companies, Halls of the, 409.

Claim, Sub-contractor's, 103.

Class-rooms, Smaller, 217.

Classic Orders, Some Underlying Principles of the, 42.

Cleveland House, Newmarket, 51.

Clients, Contractors, and Architects, 649.

Clifton College Chapel, Additions to, 420.

Club, Burlington Fine Arts, 62, 522.

Code, New York's New Building, 666.

Code of Ethics, Professional Practice and a, 406, 448.

College Architecture, A New View of, 547.

Colleges, Residential, 221.

Colour as Applied to Architecture, 120.

Combine, a White Lead, 567.

Committee of Inquiry as to Buildings on Small Holdings, 248.

Committee of Supply, In, 598.

Competition Designs for Mural Painting, 589.

Competitions, Influence of, Upon Design, 154.

Competitions, Open, 11, 45, 79, 134, 169, 204, 312, 362, 400, 508, 586, 620.

Competitions, Some North-Country School, 224.

COMPETITIONS—

Australian Federal Capital, 400, 586.

Balham, Welr Hospital, 400.

Banbury, Workmen's Dwellings, 79.

Bolton, Miners' Federation Hall and Offices, 400, 422.

Bolton, Nurses' Home, 247.

Bolton, Proposed New Golf Club House, 568.

Bristol Town-Planning Scheme, 484.

Cardiff, Football Grand Stand, 464.

Carrington, New Church, 484, 629.

Cheshire County Council School, Port Sunlight, 508.

Designs for Mural Paintings, 422.

Greenock, New School, 79, 528.

Hale Town-Planning, 484, 528.

Halifax Town Planning, 10, 141.

Hastings, East Sussex Hospital, 159.

Hastings, Sunk Bandstand, 656.

Holyrood, King Edward Memorial, 10.

Huddersfield Town Plan, 247.

Knivesmire, Council School, 464, 528.

Manchester Infirmary Site Problem, 10.

Mansfield and Bedford, Church Buildings at, 568.

Mural Designs, 204.

Morton Housing, 286.

National Welsh Sanatoria, 528.

Newcastle, Proposed New City Hall, 247.

North-Western Polytechnic, 247.

Nottingham, Baptist Church and Schools, 79.

Ottawa, King Edward Memorial, 508.

Padiham Municipal Offices, 484, 508.

Port of London Authority, New Building for the, 656.

Port Sunlight, Council School, 586.

Portland, New Council Offices, 620.

R.I.B.A. Prizes and Studentships, 1913, 286.

Salford Union Offices, Extension, 79.

Scottish National Memorial to King Edward VII., 45, 79, 134, 422.

Soane Medallion, 629.

Society of Architects' Travelling Studentship, 568, 586.

Society of Engineers Status Prize, 204.

Spennymoor Public Hall, 247.

Stafford, New Public Library, 159, 169.

Swansea Police Station Extension, 484.

Swiss National Monument, 45.

Town Planning, Garden Suburb Schemes, etc., 159.

Warrington, Oakwood Avenue Council School, and Blackwood Hall, 286.

Whiteley Park Homes, 568, 586.

Winnipeg, Legislative Buildings, 10, 169, 484.

Completion, Defects After, 323.

Concrete for Greenhouses, 463.

Concrete with Timber Reinforcement, 459.

Conditions of Contract, The R.I.B.A.; Some Points for Revision, 423.

Conference, Smoke Abatement, 360.

Congress, Royal Sanitary Institute, 411.

Constantinople, Ste. Sophia, 521.

Construction, Modern, 192.

Consulting Engineers, New Association of, 14.

Contractors, Architects, and Clients, 649.

Contractual Referees, The Question of, 268.

Control of Advertisements, 339.

Conversation on Bridges, 205.

Copyright in Architectural Design, 220.

Cork Paint, 50.

Coroner's Court, L.C.C., Poplar, 323.

CORRESPONDENCE...

"Wren and Hampton Court," by Clouesley S. Willis, 14.

"Architects of the Office of Works," by "The Whole Truth," 14.

"The National Insurance Act," by John A. Pettit, 40.

"Cottages, Farnham-road, Guildford," by H. Falkner, 98.

"The Fire Resistance of 'Eternit' Slates," by G. R. Speaker and Co.; "Skeleton Frame Buildings," by W. J. Hardcastle and B. Dicksee; "Government Architectural Assistants," by Architect, 122.

"What the Building Trade Wants," by F. Higgs, 170.

"The Influence of Competition Upon Design," by H. S. Fleming, 197.

"Ironwork in Holy Trinity Church, Sloane-square," by H. Longden, 310.

"A Century of Building": St. Matthew's, Northampton, by Herbert Norman, 310.

"Cheap Cottages," by Licentiate R.I.B.A., 324; "The Coal Strike and Time Clauses in Contracts," by United Stone Firms, Limited, 326.

"Street Name-plates," by John A. Barrett, 362.

"Cheap Cottages," by Clerk of Works, 580.

"Cheap Cottages," by Licentiate R.I.B.A., 410; "The Modern House," by Percival M. Frazer, 410.

"Some Notable Buildings in Budapest," by W. H. Shrubsole, 426.

"The Architectural Association Sketchbook," by R. F. Yerbury, 427.

"What to do with the Crystal Palace," by F. A. Bather, 456.

"R.I.B.A. and Registration," by A. W. S. Cross and G. Hubbard, 456.

"The Housing Problem in London," by Raymond Unwin, 477; "The American Frame House," by A. B. Scarlett, 477.

"The Decadence of English Architecture," by G. Hubbard and A. W. S. Cross, 478; "Shop-front Architecture," by E. Pollard and Co., 478.

"Registration of Architects," by A. W. Moore and H. Shepherd, 504.

"Registration of Architects," by A. W. S. Cross and G. Hubbard, 505.

"The A.A. Athletic Club," by John H. Squire, 505.

"What Might be Done with the Crystal Palace," by W. R. Butterfield, 506; "Architecture and Climate," by W. S. Purchase, 506.

"Architects' Assistants and Registration," by Ernest J. Dixon, 507.

"The R.I.B.A. Elections," by A Fellow of the Institute, Member R.I.B.A., The Secunder of Mr. Bonner's Motion, 527.

"The R.I.B.A. Elections," by An Associate of the Institute, 566.

"Mystic Board of Trade Returns," by J. H. Kerner-Greenwood, 566.

"The R.I.B.A. Elections," by J. H. Coram, 591.

"The R.I.B.A. Elections," by A Fellow of the Institute, 591.

"Mystic Board of Trade Returns," by W. S. N., 620.

"Plaster Reproductions," by Arnold Fairbairns, 630; "Insulating Material for Hollow Walls," by A., 630.

"St. Paul's Bridge and the R.I.B.A.," by Sydney Perks, 630.

"The Newer Responsibilities of Architects," by A. Saxon Snell, 630.
"Cross-Lighting and Ventilation," by George H. Widdows, 655.
Corrosion of Structures, 427.
Cost of Building Labour, 457.
Cottage Construction, Weather-Boarded, 556.
Cottages: at Guildford, The Old, 61, 121; Cheap, 289; Cheapening of, 652.
Council House Extension, Birmingham, 278.
Council Office, Newburn, 9.
County Hall, London, 253, 529.
Country House, Electric Light Plant at a, 50.
Cram, Mr. Ralph Adams, 369.
Criticism of Drawings Submitted for the Institute Prizes and Studentships, 1911-12, 183.
Crystal Palace: What Might be Done with the, 391.
Custom House, Liverpool, Proposed New, 522.

DANGEROUS IRON ROOF CUTTERS,

186.
Dawn of the French Renaissance, 294.
Decoration, Painting and, Notes on, 252.
Defective Materials, Responsibility for, 267.
Defects after Completion, 323.
Delhi, The Architecture of the New, 444.
Derwent Valley Waterworks, 618.
Design for a Guildhall, 273.
Design, Influence of Competition Upon, 154.
Designs for Final Examination, R.I.B.A., 566.
Details, Old and New: Descriptive Notes: Bridge at Newbury, 73; Old Bridge at Newbury, 121; Early Renaissance Altar Rails from Lancashire, 152; Shop Front, 15, Castle Street, Edinburgh, 208; Collin's Hospital, Nottingham, 380; Doorway, Lloyd's Bank, Hampstead, 508; Staircase at Redland Court, Bristol, 532; Woodwork in Pembroke College Chapel, Cambridge, 557; Chapel Door, Queen's College, Oxford, 636; Bay Window, West Mills, Newbury, 656.
Diaries for 1912, Pocket Books and, 40.
Difference in Art and Craft, Unity and, 117.
Dinner, Builders' Clerks' Benevolent Institution, 360; Builders' Foreman's Association, 134; Institute of Builders, 133.
Domestic Architecture: Passing Crises in, 292; Recent English, 7.
Door, Chapel, Queen's College, Oxford, 636.
Drawing, Architectural, 163, 470.
Drawings at the Architectural Association, 436.
Drawing Submitted for the Institute Prizes and Studentships, Criticism of, 183.
Drinking Fountain, Memorial, Wall-end-on-Tyne, 66.
Dry-rot in a Country House, 556.
Durban, South Africa's Chief Port, Supp. June 26.
Dutch House, The Cape, 575.
Dwellings, Problems, Working-Class, 225.

EARL'S COURT, SHAKESPEARE'S ENGLAND AT,

545.
Early Iron Manufacture, 554.
Early Precautions Against Fire, 276.
Early Renaissance Altar Rails from Lancashire, 152.
East Sussex Hospital Competition, 166.
Economy of Gas Power, 387.
Edinburgh: New Buildings for, 369; New Ice Rink, 328; New Police Headquarters for, 273.
Education in England and America, Architectural, 83.
Elections, The R.I.B.A., 598.
Electric Light Plant at a Country House, 50.
Electricity, Private House Lighting by, 482.
Electricity Works Extension, Poplar's, 666.
Elementary Manual of Reinforced Concrete, 463.
Elementary School Planning, 623.
Eleven-inch Cavity Walls, 308.
Ely Cathedral, The Octagon, 254.
Employment Cards, Question of 419.
Encyclopædia of Architecture, Gwilt and His, 263.
English School of Architecture, On the Need for an, 115, 193.

ENQUIRIES ANSWERED—

Acquisition of Land Under Finance Act, 1910, 280.
Action of Frost on Mortar, 486.
Architect and the Penalty Clause, 50, 66.
Bandstand Design: Question of Acoustics, 479.
Brick and Stone Pediments in London, 50.

Builder's Business on Co-operative Lines, 556.
Building Line, Question of, 556, 619.
Buildings to Measure near Teddington, 281.
Cement for Pointing in Exposed Situations, 50.
Competitions for Students, 281.
Concrete Slab Beneath Floor, 479.
Conversion of Residential Property, 281.
Cork Paint, 50.
Damp Walls, Preparation of, 280.
Defective Tiles, Responsibility for, 281.
Dispute Between Architect and Contractor, 280.
Dry-Rot in a Country House, 556.
Effect of Heat on Mortar, 486.
Electric Light Plant in a Country House, 50.
"Extraordinary Traffic," Owner and, 50.
Exudation from Pine, 479.
"Fair Wear and Tear" Clause, 281.
Insulating Material for Hollow Wall, 556.
New Footpaths, etc.: Apportionment of Cost, 619.
Penalty Clause in Contract, 479.
Putty Lime in Cement, 51.
Reinforced Concrete String Course, 280.
Reversible Fireplace, 479, 556.
Roofing Material for Flats, Light, 281.
St. Botolph's, Bishopsgate, 280.
Sand-faced Rough Cast, 479.
Silicate Solution for Exposed Chimney Breast, 280.
Stone Cupola, Supporting a, 280.
Stress on Column, 280.
Timber Roof Truss, 281.
Tip-up Baths: Question of Rating, 466.
Town Planning Parties, 479.
Validity of Tenants' Notice, 620.
Water on Site, 479.
Weather Boarded Cottage Construction, 556.
Epsom Parish Church, 529.
Erection of Liverpool Cathedral, 143, 194.
Essence of a Hollow Square, 164.
Estate, A New Building, 32.
Etcher, The Art of the, 265.
Etchings of Paris, Méryon's, 266.
Ethics of Competitions, Mr. Don Barber on the, 378.
Exact Method of Perspective, 579.
Examinations, R.I.B.A., 66; R.I.B.A., Autumn, 13; Society of Architects, 590.
Exhibition, Projected International Building, Leipzig, 619; The International, 614; The Legros, 114; Seventh Manchester Building Trades, 236, 260; Two Picture, 192.

FACTITIOUS RUSTICITY,

395.
Factories, Ventilation of, 142.
Fair Wages Clause, 243.
Fame and the Architect, 523.
Fate of the Old G.P.O., 626.
Fears for Architecture, Hopes and, 249.
Federation News, 484.
Federation of Building Trades Employers, National, 105, 114, 160, 282, 361.
Fees, Architects', 580.
Fine Art Society, 71.
Fire, Early Precautions Against, 276; Extinction, Automatic, 12; Hazard, Building Construction and, 472; Precautions in Hospitals, 277; Precautions Against, 176; Prevention Notes, 72, 178, 277, 386, 472, 582; Protection at Hampton Court Palace, 171; Protection in Paris, 75; Tests of Glazing and Reinforced Concrete Doors, 279.
Fires in 1911, London, 99.
Fireplace, An Adam Period, 179.
Fireplace, Reversible, 479, 556.
Fireproofing of Whiteley's, 199.
Flats, Proposed Upper Baker-street, 400.
Fortunes and Misfortunes in the Building Trade, 651.
French Manual of Reinforced Concrete, 462.
French Renaissance, The Dawn of the, 294.
French Romanesque Architecture, 137, 365.
Front of the Institute Premises, 265.
Furniture, Architects and, 625.
Future of Whitehall, 33.

GALLERY OF MODERN FOREIGN ART, PROPOSED,

496.
Garden City, Movement, 104.
Garden Suburb, Planning and Development of a, 147.
Gas Power, Economy of, 387.
Gate of India, The, 555.
G.P.O., The Fate of the Old, 626.
Gerrard's Cross, House at, 612.
Gilbert, Mr. Cass, and the Woolworth Building, 35, 548.
Glasgow Municipality and the Architects, 394.
Glazing and Reinforced Concrete Doors, Fire Tests of, 279.
Goupil Gallery, 70.
Great Painters, Autographs of, 317.
Greek Acanthus, 269.

Greek Sculpture, 291.
Greenhouses, Concrete for, 463.
Grouting Machine, Portinscale Bridge and the, 501.
Guides, New "Homeland," 615.
Guildford, Old Cottages at, 61, 121.
Guildhall Buildings, London's, 248.
Guildhall, Design for a, 273.
Guildhall Galleries, Proposed New, 114.
Gutters, Dangerous Iron Roof, 186.
Gwilt and His "Encyclopædia of Architecture," 263.

HAARLEM AND THE HAGUE, CHURCHES AT,

373.
Halifax Town-Planning Competition, 141.
Halls of the City Companies, 409.
Hampshire Statue, a, 5.
Hampstead, Doorway, Lloyd's Bank, 508.
Hampton Court Palace, Fire Protection at, 171.
Haslam Park, Preston, 386.
Hatch, A Serving, 279.
Hatra, The Parthian Palace of, 520.
Heating and Power Plant, A Central, 326.
Heating, "Perfect" System of, 504.
His Majesty's Theatre, Manchester, 560.
History of Lincoln's Inn Fields, 441.
Hollow Square, Essence of a, 164.
Hollow Wall, Insulating Material for, 556.
Holloway, Herbert, 516.
"Homeland" Guides, New, 615.
Hong-Kong University, 461.
Honours, New Year, 6.
Hopes and Fears for Architecture, 249.
Hospital Competition, East Sussex, 166.
Hospital Extension, Middlesex, 387.
Hospital, King's College, The New, 296.
Hospitals, Fire Precautions in, 277.
Hot-Water Supply Fittings, Standardising, 78.
Hours in the Middle Ages, Builders', 39.
House at Gerrard's Cross, 612; at Walton Heath, Surrey, 591; The Cape, Dutch, 575; The Modern, 403; of Commons, The Lighting of the, 615; Painting and Decoration, 615; Houses of Parliament, The New, Stockholm, 525; Houses, On What is Wanted in, 341.
Housing: At Byfleet, Rural, 77; of London University, 8; of the Working Classes Bill, 666; Problem in London, 419; Questions in the Commons, 608; Urban and Rural, 412.
Hunt, Messrs. W. and E. ("Architects of the Day"), 497.
Huntington, Long Island, U.S.A., Town Hall, 393.
"Hy-Rib," Some Notes on, 487.

ICE RINK, NEW, EDINBURGH,

328.
Illumination as a Study for Architects, 106.
Improvement, London, The London Society and, 417.
Improvement Scheme, Piccadilly, 449.
India, Laying Out the New Capital of, 305; The Gate of, 555.
Indian Victoria Memorial, 316.
Industrial Education and Efficiency, 211.
Influence of Competition Upon Design, 154.
Inigo Jones: and the Whitehall Palace, 163; at Lincoln's Inn, 394.
Institute: and the Society of Architects, 139, 239; Meeting-Room, 265; Premises, The Front of the, 265; Prizes and Studentships, 1913, 316.
Institute of Architects, American, 62.
Institute of Builders, 360.
Institute of Builders' Dinner, 133.
Insulating Material for Hollow Wall, 556.
Insurance Act, Builders and the, 585.
International Exhibition, 614.
International Society, 393.
Invention of Portland Cement, 33.
Ipswich Building Trades Association, 428.
Iron Manufacture, Early, 554.
Iron versus Stone Bridges, 317.
Israels, Josef, Pictures by, 521.
Italian Garden in England, Pavilion for an, 486.
Italy, France, and England, Renaissance of, 57.

JAIL ON THE RADIAL SYSTEM,

78.
Japan, "Scapa" in, 394.
Johannesburg, "The Golden City," Supp. June 26.
Jottings From Paris, 310.
Junior Institution of Engineers Visit, 159.

KAHN BUILDING, AT YORK, TEST OF A,

450.
King Edward VI. School for Girls, Birmingham, 632.
King Edward VII. Memorial, 315.
King's College Hospital, The New, 296.
Kingston Bridge, 4.
Knott, Mr. Ralph, and the London County Hall, 280.

LABOUR MOVEMENT, LONDON,

108.
Labour Unrest in the Building Trade, 406.
Lambeth Bridge, The Proposed, 264.
Lambeth Palace Library, 60.
Landscapes, Sir W. Richmond's, 369.
Laying Out the New Capital of India, 305.
Leading Articles and Notes: London Architecture in Relation to Roads and Bridges, 3; Kingston Bridge, 4; A Hampshire Statue; A Real London University; Our Edition de Luxe, 5; Southwark Cathedral; New Buildings at Cambridge; The Loan Exhibition at Burlington House; New Year's Honours, 6; The Meaning of "Baroque" and "Rococo," 29; London and Suburban Roads; Opening Out Southwark Cathedral; The Late Professor Legros, A New Building Estate, 32; Backward By-Laws; The Invention of Portland Cement; The Temple of Apollo Palatinus; The Future of Whitehall, 33; The Renaissance of Italy, France and England, 57; San Clemente, Rome; Roman Research in Italy; Lambeth Palace Library, 60; The Question of the Guildford Cottages, The London Museum, 61; Carnarvon Castle; American Institute of Architects; Spoiling the Thames; Burlington Fine Arts Club, 62; Architectural Education in England and America, 83; Students' Drawings at the Institute, 84; Architecture and Painting, 111; Westminster Abbey and the Monument Question, 112; Wellington Monument, 113; Legros Exhibition; Proposed New Guildhall Galleries; National Federation of Building Trades Employers, 114; French Romanesque Architecture, 137; The Institute and the Society of Architects; The Strand Building Site, 139; Street Improvement at Sheffield; Royal Academy Lectures, 140; Halifax Town Planning Competition; The Manchester Reference Library; The Pictorial Treatment of Architecture, 141; Ventilation of Factories, 142; Inigo Jones and the Whitehall Palace; Architectural Drawing, 163; The Soane Awards; The Society for Roman Studies; The Essence of a Hollow Square, 164; A Study of Schinkel, 165; The London Society, 189; The Picturesqueness of Bridges, 190; Royal Academy Lectures; The Late Mr. T. M. Rickman, 191; The Late M. Mathurin-Moreau; Anglo-Indian Ideas of Architectural Competition; The Position of the Architect; Modern Construction; Two Picture Exhibitions, 192; The New British Museum and Its Neighbourhood, 215; Village Architecture; Water Colour Paintings of the Old School, 216; Mural Paintings for Schools; Smaller Class-rooms, 217; The Institute and the Society of Architects, 239; Some Points of Difference With Professor Lethaby, 240; The Royal Gold Medalist; The True Hope of Architecture, 241; The Old Town Hall, Manchester, 242; A Fair Wages Clause, 243; Gwilt and His Encyclopædia of Architecture, 263; The Proposed Lambeth Bridge, 264; The Institute Meeting-room; The Front of the Institute Premises; The Art of the Etcher, 265; Méryon's Etchings of Paris; Pompeian Ornament, 266; American Architectural Omniscience; Responsibility for Defective Materials, 267; The Question of Contractual References, 268; Cheap Cottages, 289; Mr. Ralph Knott and the London County Hall; London Street Name-Plates, 290; Greek Sculpture; Bell-Frames in Church Towers; The Architect and the Public, 291; Passing Crises in Domestic Architecture; A Mistake of £1,000 in Tendering, 292; The King Edward VII. Memorial, 315; Cheap Cottages; Christchurch Priory; The Indian Victoria Memorial; The Institute Prizes and Studentships, 1913; The Basilica Plan for Churches, 316; Iron versus Stone Bridges; "No Right to Dictate"; Autographs of Great Painters, 317; The Control of Advertisements, 339; The L.C.C. Draft Regulations for Reinforced Concrete; The Society of Architects; A Protest Against Official Architecture, 340; On What is Wanted in Houses; Smoke Abatement, 341; A Book on French Romanesque Architecture, 365; The Roman Soldier and Roman Architecture, 368; Sir W. Richmond's Landscapes; Mr. Ralph Adams Cram; The Awakening of London; New Buildings for Edinburgh, 369; What Might be Done with the Crystal Palace, 391; Regent-street Architecture, 392; The International Society; Town Hall, Huntington, Long Island, U.S.A., 393; Inigo Jones at Lincoln's Inn; The Architectural

- Association Sketchbook; "Scapa" in Japan; The Glasgow Municipality and the Architects, 394; Factitious Rusticity, 395; The London Society and London Improvement, 417; The Society of Painters in Water Colours, 418; The Housing Problem in London; The Question of Employment Cards, 419; Wren's Use of Portland Stone; Additions to Clifton College Chapel, 420; The History of Lincoln's Inn Fields, 441; Regent's Park in the Making; Municipal Improvements in Paris, 443; The Architecture of the New Delhi, 444; Roads and Town Planning, 445; Architecture at the Royal Academy, 467; The Welsh Museum, 468; Royal Academy Pictures, 469; The Protection of Ancient Monuments; Architectural Drawing, 470; Architecture at the Paris Salon, 493; The Drawings at the Architectural Association; Proposed Gallery of Modern Foreign Art; The Question of Waterloo Bridge, 496; Church Architecture at the Royal Academy, 519; The Parthian Palace of Hatra, 520; The Problem of By-Law Relaxation; Pictures by Josef Israels; St. Sophia, Constantinople, 521; Proposed New Liverpool Custom House; The London University Site; Presentation to Mr. George Macfarlane; Burlington Fine Arts Club, 522; Shakespeare's England at Earl's Court, 543; A New View of College Architecture; Architectural Acoustics; Modernising Lyme Regis, 547; Mr. Cass Gilbert; Soil Pipes and the Law, 548; Architecture at the Royal Academy, 571; The Proposed Chair of Town Planning; A Drawing of the Pantheon; A Conference on Street Name-Plates, 575; Architects Signing Their Buildings; The Cambridge Slade Professor on Art Study, 574; The Newer Responsibilities of Architects, 597; The R.I.B.A. Elections; In Committee of Supply, 598; By-laws in Rural Districts; Competition Designs for Mural Painting; "The Amalgamated Building Workers' Union," 599; The Ownership of Plans; A Factor in the Shop-front Problem, 600; Elementary School Planning, 623; Architects and Furniture; The Piccadilly Façade, 625; The Fate of the Old G.P.O.; Proposed New Richmond Bridge; London Building Trades Agreement, 626; Architects, Clients, and Contractors, 649; The Architect Poseur; The Preservation of Ancient Monuments; Fortunes and Misfortunes in the Building Trade, 651; The Cheapening of Cottages, 652.
- Lectures, Royal Academy, 140, 191.
- Leeds and Yorkshire Architectural Society, 156.
- Legal Cases: Falling Brick Injures Foot Passenger, 196; A Question of Soil-Pipes, 235; Liability for Accident, 235; Builders' Van in Collision, 284; The Question of Contractual Referees, 285; Vacuum Cleaning: Important Judgment in the House of Lords, 285; Who Pays the Quantity Surveyor? 361; Builders' "Third Party" Liability, 371; Builders' Claim Against M.P., 488; Validity of an Architects' Certificate, 489; "Responsibilities of Architects," 636; Architects' Fees for Abandoned Plans, 636; "Principal Contractors" and Sub-Contractors' Liability for Accident," 654.
- Legros Exhibition, 114.
- Legros, The Late Professor, 32.
- Leicester Galleries, 70.
- Leicester Society of Architects, 155.
- Library: Lambeth Palace, 60; Reference, Manchester, 141; Royal Institute, and Some of its Contents, 451.
- Lighting by Gas, Private House, 513.
- Lighting of the House of Commons, 615.
- Lincoln's Inn: Inigo Jones at, 394; Fields, The History of, 441.
- Little Theatre, New York, 627.
- Liverpool Cathedral, Erection of, 143, 194.
- Liverpool Custom House, Proposed New, 522.
- Lloyd's Bank, Hampstead, Doorway, 508.
- Loan Exhibition at Burlington House, 6.
- Local Authorities, Town Planning Conference of, 455.
- Lockwood's Price Book, 99.
- Loggia, The Open Air Living Room or, 218.
- London: An Architectural Syllabus, 156; and Suburban Roads, 32; Architecture in Relation to Roads and Bridges, 3; Association of Master Decorators, 327; Authority, Port of, Preliminary Competition, 370; Awakening of, 369; Building Trade Dispute Settled, 631; Building Trades Agreement, 626; County Hall, 529; County Hall, Progress with the, 629; County Hall, Mr. Ralph Knott and the, 290; Fires in, 1911, 99; Housing Problem in, 419; Labour Movement, 108; Museum, 61; Opera House, 245; Society, 189, 417, 549, 592; Society of Master Decorators, 425; Street Name-Plates, 290; University, A Real, 5; University Site, 522; University, Housing of, 8.
- L.C.C. Coroner's Court, Poplar, 323.
- L.C.C. Draft Regulations for Reinforced Concrete, 340.
- London's Guildhall Buildings, 248; King Edward Memorial, 186; Main Drainage Pumping Plant, 75; New County Hall, 253; New Scale, 44; Roman Roads, 66.
- Lyme Regis, Modernising, 547.
- MACFARLANE, MR. GEORGE, PRESENTATION TO, 522.**
- Magazines and Reviews 96, 309, 410, 623.
- Manchester: Building Trades Exhibition, Seventh, 236, 260; His Majesty's Theatre, 560; Old Town Hall, 242, 532; Reference Library, 141; Society of Architects, 155.
- Manufacturing Stone from Slag, 133.
- Marble Screen, A Mogul, from Delhi, 662.
- Meaning of "Baroque" and "Rococo," 29.
- Mechanics of Building Construction, 632.
- Medallist, The Royal Gold, 241.
- Meeting-Room, The Institute, 265.
- Memorial, Indian Victoria, 316; King Edward VII., 186, 315; Drinking Fountain, Walsend-on-Tyne, 66.
- Meryon's Etchings of Paris, 266.
- Metropolitan Railway's New Offices, 401.
- Middlesex Hospital Extension, 387.
- Misfortunes in the Building Trade, Fortunes and, 651.
- Mistake of £1,000 in Tendering, 292.
- Modern Construction, 192.
- Modern Foreign Art, Proposed Gallery of, 496.
- Modern House, 403.
- Modern House Planning, 172.
- Modernising Lyme Regis, 547.
- Mogul Marble Screen from Delhi, 662.
- Monument, Wellington, 113; Question, Westminster Abbey and the, 112.
- Monuments, Ancient, 590; Preservation of Ancient, 651.
- Municipal Improvements in Paris, 443.
- Municipal Works, New, 646, 655; Proposed, 516.
- Municipality, Glasgow, and the Architects, 394.
- Mural Painting, Competition Designs for, 593.
- Mural Paintings for Schools, 217.
- Museum, London, 61; New British, and Its Neighbourhood, 215; Science, New Building Scheme, 635; Welsh, 463.
- Music, Architecture Considered in Relation to, 318.
- NAME-PLATES, LONDON STREET, 290, 573, 578, 655.**
- Natal (Maritzburg), Ancient and Modern, Supp June 26th.
- National Federation of Building Trades Employers, 105, 114, 160.
- National Insurance Act, 54.
- New Buildings for Edinburgh, 369.
- Newer Responsibilities of Architects, 597, 611.
- "Neo-Grac," An Adverse Criticism of, 371.
- New Light on Architectural Acoustics, 550.
- New Light on Ventilation, 209.
- New South Wales, The Building Trade in, 358.
- New Year Honours, 6.
- New York, The Little Theatre, 627.
- New York's New Building Code, 666.
- News Items 45, 105, 124, 159, 185, 212, 259, 286, 298, 328, 362, 388, 413, 425, 460, 485, 516, 551, 566, 586, 608, 646, 658.
- Newburn, New Council Office, 9.
- Newbury, Bridge at, 73, 121.
- Newmarket, Cleveland House, 51.
- Northern Architectural Association, 54.
- Northern Counties Federation of Building Trade Employers, 54, 361.
- Notes from Paris 97.
- Notes on Painting and Decoration, 252.
- Novely in Building Construction Plant, 654.
- OBITER DICTA, 275, 388.**
- Obituary: Allen, E. J. Milner, 636; Alleyne, Sir John G. N., 260; Attwood, George, 260; Bare, Blomfield, 80; Bell, Joseph, 12; Bradshaw, J. J., 486; Brims, D. N., 450; Burnham, D. H., 601; Clark, J. Wright, 658; Fox, C. Beresford, 486; Glover, William, 171; Christison, Dr. David, 171; Graham, Alexander, 236; Hall, William, 80; Harston, Arthur, 516; Haviland, Frank, 486; Hildrey, F., 636; Hogan, John, 409; Holloway, Herbert, 516; King, Albert Edward, 12; Larche, M. Raoul, 615; Macquoid, Thomas Robert, 409; Moreau, M. Mathurin, 192; Morham, Robert, 636; Perry, Dr. Walter Copland, 12; Phené, Dr. 336; Pringle, Sir George, 12; Pritchett, G. E., 260; Reynolds, Dr. Osborne, 260; Smirke, Sydney, 636; Taylor, Sir John, 486; Tomlinson, John, 79; Williams, Henry J., 636; Wood, Gilbert, 12.
- Octagon, Ely Cathedral, 254.
- Officers' Training Quarters, 99.
- Offices, New, Metropolitan Railway's, 401.
- Official Architecture, A Protest Against, 340.
- Omniscience, American Architectural, 267.
- Open-Air Living Room or Loggia, 218.
- Opera House, The London, 245.
- Operating Theatres, Bradford, 411.
- Orders, Classic, Some Underlying Principles of the, 42.
- Ornament, Pompeian, 266.
- Ornamental Design, Practical Conditions of, 652.
- Our Plate, 9, 45, 236, 328, 409, 527, 566, 583, 631, 664.
- Owner and "Extraordinary Traffic," 50.
- Ownership of Plans, 600.
- Oxford, Chapel Door, Queen's College, 636.
- Ozonair, Ventilation by, 516.
- PAINT, CORK, 50.**
- Painters in Water Colours, The Society of, 418.
- Painting, Architecture and, 111; and Decoration, House, 615; and Decoration, Notes on, 252; Techniques of, 615.
- Panelling, The Winchester Oak, 49.
- Pantheon, A Drawing of the, 573.
- Papers Read: "Steel Specifications," by Major H. B. Strange, 49; "Portland Cement on Public Works," by Gerald Thornhill, A.M.I.C.E., 52; "Architectural Topics," by Henry C. Charlwood, 54; "The Work of Alfred Stevens," by E. F. Strange, 87; "Colour as Applied to Architecture," by Sir Alfred East and Edgar Wood, 120; "The Planning and Development of a Garden Suburb," by Michael Bunney, 147; "Construction and Design," by Sir Charles Nicholson, 155; "Architectural Education," by H. P. G. Maule, 155; "East Anglian Rural Churches and their Decoration," by William Davidson, 156; "London: An Architectural Syllabus," by Professor Beresford Pite, 158; "Modern House Planning," by A. G. R. Mackenzie, 172; "Precautions Against Fire," by A. J. Stubbs, 176; "Some Reminiscences," by Mr. Leonard Stokes, 182; "Criticism of Drawings Submitted for the Institute Prizes and Studentships," by Gerald Horsley, 183; "A Conversation on Bridges," by Paul Waterhouse, 205; "New Light on Ventilation," by Leonard Hill and Martin Flack, 209; "Residential Colleges," by Edward Warren, 221; "Some Working Class Dwellings Problems," by E. C. P. Monson, 225; "Hopes and Fears for Architecture," by Mr. Eden, 241; "Hopes and Fears for Architecture," by F. C. Eden, 249; "A Century of Building," by Maurice B. Adams, 255; "The Dawn of the French Renaissance," by W. H. Ward, 294; "American Architecture from the British Point of View," by C. A. Daubney and C. C. Bwver, 299; "A Central Heating and Power Plant," by R. J. Durlay, 328; "High Dams of Great Length," by Reginald Ryves, 335; "Patriotism in Architecture," by C. E. A. Voysey and Arthur Keen, 350; "An Adverse Criticism of 'Neo-Grac,'" by Alan L. Snow, 371; "Planning Art, Museum, and Picture Galleries," by Edwin T. Hall, 374; "The Modern House," by Percival M. Fraser, 403; "Professional Practice, and a Suggested Code of Ethics," by C. McArthur Butler, 406; The R.I.B.A. Conditions of Contract: Some Points for Revision," by A. Saxon Snell, 423; "Professional Practice and a Code of Ethics," by C. McArthur Butler, 448; "The Royal Institute Library and Some of its Contents," by C. Harrison Townsend, 451; "Building Construction and Fire Hazard," by L. H. Fryer, 472; "Private House Lighting by Electricity," by W. R. Rawlings, 482; "Recent University Architecture in the United States," by Ralph Adams Cram, 553; "The 'Permutit' System of Water Softening," by Dr. John F. Meyer, 557; "The Newer Responsibilities of Architects," by William Woodward, 611; "The Waste of Public Water Supplies," 663.
- Paris: Apartment Houses, 64; Fire Prevention in, 75; Jottings from, 310, 513, 662; Municipal Improvements in, 443; Notes from, 97; Salon, Notes at the, 548; Shop-fronts, Old and New, 604.
- Parliament, In, 258, 285, 296, 354, 387, 474, 507, 565, 612, 658.
- Parliament Buildings, Wellington, New Zealand, 102.
- Parthian Palace of Hatra, 520.
- Passing Crises in Domestic Architecture, 292.
- Patriotism in Architecture, 350.
- Pavilion for an Italian Garden in England, 486.
- Pediments in London, Brick and Stone, 50.
- Pembroke College Chapel, Cambridge, Woodwork in, 557.
- Penalty Clause, Architect and the, 50, 66.
- "Perfect" System of Heating, 594.
- "Permutit" System of Water Softening, 557.
- Perspective: An Exact Method of, 579; R's Methods of, 489.
- Petroleum Spirit, Storage of, 178.
- Phené, Dr., 336.
- Phoenix Fire Insurance Offices, Leeds, 385.
- Piccadilly Façade, 625.
- Piccadilly Improvement Scheme, 449.
- Pictorial Treatment of Architecture, 141.
- Picture Exhibitions, 70, 170, 279, 311, 423, 563, 579.
- Picture Galleries, Planning Art Museums and, 374.
- Pictures by Josef Israels, 521.
- Pictures, Royal Academy, 469.
- Picturesqueness of Bridges, 190.
- Plan for Churches, The Basilica, 316.
- Plans, Ownership of, 600.
- Planning, Elementary School, 623; Modern House, 172.
- Planning and Development of a Garden Suburb, 147.
- Planning Art, Museums and Picture Galleries, 374.
- Plasterer, The Art of the, 593.
- Pocket-books and Diaries for 1912, 40.
- Pointing in Exposed Situations, Cement for, 50.
- Police Headquarters for Edinburgh, New, 273.
- Polytechnic, The Regent Street, 156.
- Pompeian Ornament, 266.
- Poplar, L.C.C. Coroner's Court, 323.
- Poplar's Electricity Works Extensions, 666.
- Port of London Authority, Preliminary Competition, 370.
- Portinscale Bridge and the Grouting Machine, 415, 501.
- Portland Cement: on Public Works, 52, 76; Who Invented? 48; Invention of, 33.
- Portland Stone, Wren's Use of, 420.
- Poseur, The Architect, 651.
- Post Office Buildings, 592.
- Practical Conditions of Ornamental Design, 652.
- Practical Points in Town Planning, 593.
- Precautions Against Fire, 176, 276.
- Presentation to Mr. George Macfarlane, 522.
- Preservation of Ancient Monuments, 651.
- Preston, Haslam Park, 386.
- Pretoria Past and Present, Supp. June 26.
- Principles of the Classic Orders, Some Underlying, 42.
- Priory, Christchurch, 316.
- Private House Lighting by Electricity, 462; by Gas, 513.
- Prizes and Studentships, 1912 and 1913, R.I.B.A., 123, 316.
- Problem of the Restorer, 244.
- Problems in Design, New R.I.B.A., 483.
- Professional Practice, and a Suggested Code of Ethics, 406, 448.
- Professor Lethaby, Some Points of Difference with, 240.
- Protection of Ancient Monuments, 470.
- Protest Against Official Architecture, 340.
- Public, Architect and the, 291.
- Public Offices (Sites) Bill, 412.
- Public Works, Portland Cement on, 52, 76.
- Pumping Plant, London's Main Drainage, 75.
- Putty Lime in Cement, 51.
- QUANTITY SURVEYORS' ASSOCIATION, 559.**
- Queen's College, Oxford, Chapel Door, 636.
- R'S METHOD OF PERSPECTIVE, 489.**
- Radial System, A. Jail on the, 78.
- Ransome Steel Piling, 356.
- Rebuilding of St. Mark's Campanile, 445.
- "Recent English Domestic Architecture," 7.
- Recent University Architecture in the United States, 553.
- Redland Court, Bristol, Staircase at, 532.
- Referees, The Question of Contractual, 268.
- Regent Street Architecture, 392.
- Regent Street Polytechnic, 156.
- Regent's Park in the Making, 443.
- Registration of Architects, Statutory, 414; Transvaal Bill, 150.

Regulations for Reinforced Concrete, The L.C.C. Draft, 349, 358.
Reinforced Concrete: Bridge, Witley, Surrey, 490; Doors, Glazing and Fire Tests of, 279; Elementary Manual of, 463; French Manual of, 462; E. P. Wells on, 462; L.C.C. Draft Regulations for, 340.
Renaissance of Italy, France, and England, 57.
Research in Italy, Roman, 60.
Residential Colleges, 221.
Responsibility for Defective Materials, 267.
Responsibilities of Architects, The Newer, 597, 611.
Restoration of Tattershall Castle, 620.
Restorer, The Problem of the, 244.
Reversible Fireplace, 479, 556.
Reviews, Magazines and, 96, 309, 410, 628.
R.I.B.A. Autumn Examinations, 13; Conditions of Contract: Some Points for Revision, 423; Designs for Final Examination, 631; Elections, 598; Examinations, 66; Problems in Design, 483; Library and Some of its Contents, 451; Prizes and Studentships, 1912, 125.
Richmond Bridge, Proposed New, 626.
Roads, London and Suburban, 32.
Roads and Bridges, London Architecture in Relation to, 3.
Roads and Town Planning, 445.
Roman Research in Italy, 60.
Roman Roads, London's, 66.
Roman Soldier and Roman Architecture, 369.
Roman Studies, Society for, 164.
Romanesque Architecture, French, 137, 365.
Royal Academy, Architecture at the, 467, 571.
Royal Academy Lectures, 140, 191.
Royal Academy Pictures, 469.
Royal Gold Medallist, 241.
Royal Sanitary Institute Congress, 411.
Rural Districts, By-laws in, 599.
Rural Housing at Byfleet, 77.
Rusticity, Factitious, 395.

ST. MARK'S CAMPANILE, THE RE-BUILDING OF, 445.

St. Paul's High School for Girls, 69.
Salon, The Paris, 493, 548.
San Clemente, Rome, 60.
Sta. Sophia, Constantinople, 521, 616.
Scaffolding Practice, Belgian, 659.
Scale, London's New, 44.
Schinkel, A Study of, 165.
School: Competitions, Some North-Country, 224; of Architecture, On the Need for an English, 115, 193; for Girls, King Edward VI., Birmingham, 632; for Girls, St. Paul's High, 69; Planning, Elementary, 623; South London Technical Art, 97.
Schools, Mural Paintings for, 217.
Science Museum: New Building Scheme, 665.
Sculpture, Greek, 291.
Secretary, The New A.A., 248.
Serving Hatch, A, 279.

Shakespeare's England at Earl's Court, 545.
Sheffield: Improvement Scheme, 198; Society of Architects, 514; Street Improvement at, 140.
Shop-front Problem, 600, 631.
Shop-fronts, Paris, Old and New, 604.
"Shorne Hill," near Totton, Hampshire, 427.
Sir W. Richmond's Landscapes, 369.
Site, Building, The Strand, 139.
Sketch-book, The Architectural Association, 394.
Slade Professor at Cambridge, New, 590.
Small Holdings, Buildings on, Committee of Inquiry as to, 248.
Smoke Abatement, 341; Conference, 361; Exhibition, International, 336.
Soane Awards, 164.
S.A.D.G., The, 293.
"Scapa," in Japan, 394.
Society, London, 189, 549, 592; for Roman Studies, 164; of Architects Examinations, 590; of Architects, Institute and the, 139, 239; of Architects, Ulster, 102; of Painters in Water Colours, 418; of Portrait Painters, 70.
Societies and Institutions, 80, 185, 212, 222, 247, 284, 312, 327, 464, 492, 614, 655.
Soil-pipes and the Law, 548.
Soldier, The Roman, and Roman Architecture, 363.
South Africa, Building Interests in, 184, 380, 619; Business Opportunities in, Supp. June 26.
South African Export Supplement, 655.
South London Technical Art School, 97.
Southwark Cathedral, 6, 32, 66.
Specifications, Steel, 49.
Spoiling the Thames, 62.
Stable, Cowhouse, and Piggery, Fittings, 72.
Staircase at Redland Court, Bristol, 532.
Standardisation of Catalogues, 615.
Standardising Hot-water Supply Fittings, 78.
State Brickworks, 666.
Statue, A Hampshire, 5; Vicissitudes of a, 560.
Statutory Registration of Architects, 414.
Steel Piling, Ransome, 336.
Steel Specifications, 49.
Stevens' Collections, Acquisition of, 259.
Stevens, Work of Alfred, 87.
Stockholm, The New Houses of Parliament, 525.
Stokes, Mr. Leonard, Some Reminiscences by, 182.
Stone, Manufacturing, from Slag, 133.
Storage of Petroleum Spirit, 178.
Strand Building Site, 159.
Street Improvement at Sheffield, 140.
Street Name-plates, 573, 578, 655.
Structure of Sta. Sophia, 616.
Structures of the Future, Aviation and the, 635.
Structures, Corrosion of, 427.
Students' Drawings at the Institute, 84.

Sub-contractor's Claim, 103.
Syllabus, A London Architectural, 158.
TATTERSHALL CASTLE, THE RESTORATION OF, 620.
Teak Trade and the "Tusker," 662.
Technical Art School, South London, 97.
Technics of Painting, 615.
Temperature Regulation in Buildings, 408.
Temple of Apollo Palatinus, 33.
Test of a Kahn Building at York, 450.
Thames, New Tunnel Under the, 245; Spoiling the, 62.
Theatre, His Majesty's, Manchester, 560; The Little, New York, 627.
Timber Reinforcement, Concrete with, 459.
Tomlinson, Late Mr. John, 79.
Tooth's Gallery, 72.
Town Hall, Huntington, Long Island, U.S.A.
Town Hall, Manchester, Old, 242, 532.
Town-planning: Competition Halifax, 141; Conference of Local Authorities, 455; Lectures, Birmingham University, 186; Practical Points in, 588; Proposed Chair of, 573; Review, 615; Roads and, 445.
Trade and Craft: Callender's Damp Course Specialities, 26; John Tann's Sales and Doors, 26; Some New Tiles and Bricks (James Brown (London), Ltd.), 26; Artistic Lighting Fittings (W. J. Stockvis), 99; Vitreous Tiles and Mosaic (Chance Bros. and Co., Ltd.), 99; Standardisation of Shop Fronts (E. Pollard and Co.), 99; Structural Ironwork (St. Pancras Ironwork Co., Ltd.), 133; Lift Installations (Smith, Major, and Stevens, Ltd.), 133; Hygiene Heating: A New Radiator (Simplex Conduits, Ltd.), 186; Claridge's Patent Asphalt, 223; The Lighting of Country Houses (Tredegar and Co.), 260; "The Charm of the Panelled Room" (Higgs and Hill), 283; Artistic Electric Fittings (F. and C. Osler), 283; Ferro Glass for Floor, Roof and Pavement Lights (J. A. King and Co.), 283; Thomas Parsons and Sons' "Dreadnought," 284; Exterminating Insect Pests (R. Sumner and Co., Ltd.), 311; The Installation of 'Phones (Western Electric Co., Ltd.), 311; Warming and Ventilating Specialities (E. H. Shorland and Brother), 326; Electric Supplies (Simplex Conduits, Ltd.), 326; Casements (George Wragge, Ltd.), 355; Carron Interior Grates, 387; A New Joinery Catalogue (C. Jennings and Co.), 387; A New Metal Filament Lamp (British Thomson-Houston Co.), 387; The All-Time Damp Course (A. G. Lee), 490; "Pudlo," A Damp-proofing Preparation (Kerner-Greenwood and Co.), 489; Claridge's Asphalt, 582; A Patent High-Lift Turbine Pump (Mather and Platt), 592; Architects' Designs in Brass and Iron Goods (Swain, Verney and Co.), 592; Warming and Ventilating Installations

(E. H. Shorland and Bro.), 592; Callenders' Waterproofing Medium, 592; "More Daylight for Dim Interiors" (Pilkington Bros., Ltd.), 614.
Training Quarters, Officers', 89.
Transvaal Bill, Registration of Architects, 150.
Treatment of Architecture, Pictorial, 141.
True Hope for Architecture, 241.
Tunnel Under the Thames, 245.
"Tusker," The Teak Trade and the, 662.
ULSTER, SOCIETY OF ARCHITECTS, 102.
Union, Amalgamated Building Workers', 599.
Unity and Difference in Art and Craft, 117.
University, Hong-Kong, 461; Housing of London, 8; Site, London, 522.
University Architecture in the United States, Recent, 553.
Urban and Rural Housing, 412.
VENTILATION, OZONAIR, 516; New Light on, 209; of Factories, 142.
Vicissitudes of a Statue, 560.
Village Architecture, 216.
WACES CLAUSE, A FAIR, 243.
Walton Heath, Surrey, House at, 591.
Waste of Public Water Supplies, 663.
Water-colour Paintings of the Old School, 216.
Water Softening, "Permutit" System of, 557.
Water Supplies, The Waste of Public, 663.
Waterloo Bridge, The Question of, 496.
Waterworks, Derwent Valley, 618.
Weather-Boarded Cottage Construction, 556.
Wellington Monument, 113.
Wellington, New Zealand, New Parliament Buildings, 102.
Welsh Museum, 468.
Wesleyan Church House, Westminster, 121.
Westminster Abbey and the Monument Question, 112.
What is Wanted in Houses, On, 341.
What is Wanted in the Building Trades, 34, 63, 85, 142.
What Might be Done with the Crystal Palace, 381.
White Lead Combine, 567.
Whitehall, Future of, 33.
Whitehall Palace, Inigo Jones and the, 163.
Whiteley's, Fireproofing of, 199.
Who Invented Portland Cement? 48.
Winchester Oak Panelling, 49.
Woodwork in Pembroke College Chapel, Cambridge, 557.
Woolworth Building, Mr. Cass Gilbert and the, 75.
Work of Alfred Stevens, 87.
Working-class Dwellings Problems, Some, 225.
Working Classes, Housing of the, B.I., 666.
Wren's Use of Portland Stone, 420.
YEAR BOOKS, SOME USEFUL, 388
York, Kahn Building at, Test of a, 450.

CONCRETE AND STEEL SECTION.

ARCHES, ELASTIC, 16.
Architectural Possibilities of Steel, 131.
Artistic Treatment of Reinforced Concrete, 125.
BEAM REACTIONS ON COLUMNS, ECCENTRICITY OF, 329.
Beams, True Bending Moments of, with Various Degrees of Fixity, 435.
Bending Moments and Formulae, 533.
Bending Moments of Beams with Various Degrees of Fixity, The True, 435.
Book: The Chemistry of Cement, 234.
Bridge, Reinforced Concrete, at King's Cross Station, 434; Largest Reinforced Concrete, 646.
By-Law as to Buildings of Steel or Iron Framework, 640.
CALCULATING THE STRENGTH OF STEEL PILLARS, 535.
Cement, Chemistry of, 234; Combination, The Proposed, 23; of Cement, 234.
Cement and Concrete Manual, 125.
Chimney Stacks, Reinforced Concrete, 437.
Coal Store and Gantry, Reinforced Concrete, Rochdale Gasworks, 643.
Columns, Composite, of Concrete and Steel, 129; Eccentricity of Beam Reactions on, 329; Reinforced Concrete, Stresses in, 128.
Composite Columns of Concrete and Steel, 129.
Concrete, Consistency of, 127; Construction, Steel and, a New Type

of, 540; Floors, Surfacing, 430; Fountain, 642; Patching and Repairing, 534; Slabs, Tests of, 332; Water Mains, 231.
Concrete Institute, 15, 332, 429, 536; Expansion, 533; Transactions and Notes, 26.
Concrete and Steel, Composite Columns of, 129.
Consistency of Concrete, 127.
Craze for Speed, 637.
DAMS OF GREAT LENGTH, HIGH, 535.
"Dentile" System, Test of Floors on, 532.
Dome of the Eton Memorial, 640.
Dover Harbour Improvements, 235.
ECCENTRICITY OF BEAM REACTIONS ON COLUMNS, 329.
Elastic Arches, 16.
Elastic Limit, Yield Point and, 132.
Elasticity, Relative Moduli of, 235.
Eton Memorial, Dome of the, 640.
FACTORY, STEEL FRAME, WITTON, BIRMINGHAM.
Floors, Concrete, Surfacing, 430.
Formulae, Bending Moments and, 533.
Fountain, A Concrete, 642.
Framework, Steel or Iron, By-Law as to Building of, 640.
GRAIN ELEVATORS, REINFORCED CONCRETE, 130.
HARBOUR IMPROVEMENTS, DOVER, 235.
High Dams of Great Length, 335.
Hy-Rib, Some Notes on, 487.

IRON AND STEEL, ANCIENT ORIGIN OF, 541; Industry, The Liège, 23; World's Production of, 129.
KNEE-BRACED ROOF TRUSSES, 638.
LARGEST REINFORCED CONCRETE BRIDGE, 646.
Leaders. The Concrete Institute, 15; A Cement and Concrete Manual, 125; Artistic Treatment of Concrete, 125; The L.C.C. Draft Regulations, 229; The Aesthetic Side, 229; Eccentricity of Beam Reactions on Columns, 329; Bending Moment Formulae, 429; Concrete Institute Expansion, 533; The Craze for Speed, 637.
Liège Iron and Steel Industry, 23.
Lighthouse, A Reinforced Concrete, 436.
Lock-Woven Mesh System of Reinforcement, 24.
L.C.C. Draft Regulations, 229.
MANUAL, A CEMENT AND CONCRETE,
Materials Used in Reinforced Concrete, Tinting of, 333.
Mica Surfacing for Concrete, 235.
NEW YORK'S NEW REGULATIONS FOR REINFORCED CONCRETE CONSTRUCTION, 233.
ORIGIN OF IRON AND STEEL, ANCIENT, 541.
PAPERS READ: "Some Recent Works in Reinforced Concrete," by G. C.

Workman, 25; "Reinforced Concrete Wharves and Warehouses," by S. H. Ellis, 129; "The Architectural Possibilities of Steel," by Henry C. Charlwood, 131; "Testing of Materials Used in Reinforced Concrete," by A. A. H. Scott, 333; "High Dams of Great Length," by Reginald Ryves, 335; "The True Bending Moments of Beams With Various Degrees of Fixity," by Maurice Behar, 435; "The Ancient Origin of Iron and Steel," by Sir Robert Hadfield, 541.
Patching and Repairing Concrete, 534.
Pillars, Steel, Calculating the Strength of, 535.
Poles, Reinforced Concrete, 232.
Proposed Cement Combination, 23.
RACECOURSE STAND, REINFORCED CONCRETE, WARWICK, 539.
Ransome Steel Piling, 336.
Recreation Hall, Southall, 231.
Regulations for Reinforced Concrete Construction, New York's New, 233; Reinforced Concrete, Draft, L.C.C., 229.
Reinforced Concrete: Bridge at King's Cross Station, 434; Chimney Stacks, 437; Coal Store and Gantry, Rochdale Gas Works, 643; Grain Elevators, 130; Lighthouse, 436; Poles, 232; Racecourse Stand, Warwick, 539; Some Recent Works In, 25; Wharves and Warehouses, 129.
Reinforcement, The Lock-Woven Mesh System of, 24.

Relative Moduli of Elasticity, 235.
Repairing Concrete, Patching and, 534.
Rochdale Gas Works, Coal Store and Gantry, 643.
Roof Shield in Reinforced Concrete Tunnel Construction, 539.
Roof Trusses, Knee-Braced, 638.

SOUTHALL RECREATION HALL, 231.
Speed, the Craze for, 637.

Steel, Architectural Possibilities of, 151.
Steel and Concrete Construction, A New Type of, 540.
Steel or Iron Framework, By-law as to Buildings of, 640.
Steel-Frame Factory, Witton, Birmingham, 126.
Strength of Steel Pillars, Calculating the, 535.
Stresses in Reinforced Concrete Columns, 128.

Surfacing Concrete Floors, 430.
Surfacing for Concrete, Mica, 235.

TEST OF FLOORS ON THE "DENTILE" SYSTEM, 332.
Tests of Concrete Slabs, 332.
Testing of Materials Used in Reinforced Concrete, 335.
Treatment of Concrete, Artistic, 125.
True Bending Moments of Beams with Various Degrees of Fixity, 435.

Tunnel Construction, A Roof Shield in Reinforced Concrete, 539.
WARWICK, REINFORCED CONCRETE RACECOURSE STAND, 539.
Water Mains, Concrete, 231.
Wharves and Warehouses, Reinforced Concrete, 129.
World's Production of Iron and Steel, 129.
YIELD POINT AND ELASTIC LIMIT, Y.M.C.A. Building, The Central, 18.
132.

ILLUSTRATIONS.

ABBEY, LORSCH, PORCH TO, 366.
Abbey of Riquier, 366.
Aberdour, Fife, Sitting-room Bay, The Murrel, 187.
Acanthus, The Greek, 268-270.
Africa, West, A Bungalow, 488.
Altar Piece by Battens at Kensal Rise, 119.
Altar Rail, Bolton - by - Bowland Church, Lancs., 152, 153.
Altar Rails, St. Chad's Church, Shrewsbury, 470, 471.
American Frame House, Section Showing Construction of, 477.
Amsterdam, The Great State Museum, 373.
Anthemion and Acanthus from Frieze of Erechtheum, 268.
Apartment Houses, Paris, 64, 65, C.P., Jan. 17.
Appleton Cross, Detail of Fireplace at, 179.
Apse of the Madeleine, Paris, C.P., April 17.
Argentine Republic, A Villa in the, 495.
Athens, Capital of the Column from the Tower of the Winds, 269.

BACWORTH, MAYNARD ARMS HOTEL, 375.
Baker Street Station, Metropolitan Railway, New Offices and Flats, 400, 401-405.
Baldeck, Herts, Sundial on House at, 1.
Balham Constitutional Club, Addition to, 504.
Band Stand Design, 479.
Bank, People's Savings, Cedar Rapids, Iowa, 96, Detail of Column in, 97.
Bank Premises, Nuneaton, 364.
Bay to Business Premises in Leicester, Lead Covered, 359.
Bedsteads, Stock Patterns of English and Italian, 117.
Belgian Scaffolding, 659-661.
Berlin, New Offices of the City Gas Works, 277.
Berlin, Unter den Linden, 415.
Berkshire County Hall, Reading, 338, 342, 346.
Bismarckstrasse and Berlinerstrasse, Charlottenburg, 109.
Bologna, The Madonna di S. Luca, 30.
Bolton-by-Bowland Church, Lancs., Altar Rails from, 152-153.
Bombay, "The Gate of India," on the Apollo Bunder, 555.
Boot Shop, Boulevard de la Madeleine, Paris, 606.
Bordeaux, Faculty of Medicine and Chemistry, 295.
Boscherville, Saint Georges, 368.
Bradford, Design for Operating Theatres, New Royal Infirmary, 411.
Brickwork, A Comparison of Ancient and Modern, 119.
Bridge, Reinforced, Concrete, Whitely Park, Surrey, 490.
Budapest: General View of, 395; Agricultural Museum, ; National Museum 396; Palace of the Emperor Francis Joseph on the Burgterrasse, 397; The Houses of Parliament, 399.
Burnham, D. H., Portrait of, 601.
Burton, Decimus, Detail Drawings by, 452.
Business Premises: No. 93, Mortimer Street, London, 498; Old Bond Street, W., 499; Parliament Street, Cave Town, Supp. June 26.
Butcher's Shop, Rue de Varennes, Paris, 604.

CAMBRIDGE, PEMBROKE COLLEGE CHAPEL, DETAIL OF WOODWORK, 557-559.
Cape Colony, An Old Dutch Dwelling in, 577.
Canetown, The Castle Gateway, 575: Business Premises, Supp. June 26.
Capital of Column from the Tower of the Winds, Athens, 269.
Capitals Sculptured on a Slab on a Corinthian Temple, 270.

Cardiff, Design for a Shop Front at, 631.
Cartoon for Stained Glass, "The Song of Songs," 632.
Casements by George Wragge, Ltd., Modern Window With, 355.
Castle Gateway, Capetown, 575.
Cathedral, Haarlem, Holland, 372; Liverpool, 143-146, 194-198, 370, C.P., Feb. 7.
Cavity Walls, Eleven-Inch, 308.
Chancel, Detail of, Holy Trinity Church, Sloane Square, S.W., 237.
Chamneys, Basil, Portrait of, 241.
Chapel, Clifton College, Alterations and Additions to, 420-422, C.P., April 24.
Château de Balleroy, 59.
Château de Blois: Cornice of South Side of Court, 57.
Château de Chantilly, Foot of Staircase, 292.
"Chewton Glen," Lodge at, Christchurch, Hampshire, 621.
Chimneypiece: in Dining-room, "Deysbrook," Near Liverpool, 261; at "Crowshott," Highclere, 608, 609; "Derry's Wood," Womersley, 647; Drawing-room at "Littlecroft," Oakleigh Park, Whetstone, N., 465; Front Room of No. 35, Lincoln's Inn Fields, 442.
Chimney Stack on House at Witley, Surrey, 327.
Chislehurst, Kent, Detail of New Terrace at "Foxbury," 389.
Christchurch, Hampshire, Lodge at "Chewton Glen," 621.
Church: At Gensac, Nave of the, 138; at Savennieres, Apse to, 138; Design for New, in the Rue de Vanves, Paris, 493; Epsom Parish, 528-530; of Saint Benoit-sur-Loire, 139; of St. Boniface, St. Budeaux, Devon, 586, 587; of St. Martial, Limoges: Section Through Nave, 337; of St. Satyrus, Milan, Plan of the, 367; of St. Saviour, Lewisham, London, S.E., C.P., Jan. 10; of St. Sophia, Constantinople, 616-618, C.P., June 12; St. Chad's, Shrewsbury, New Altar Rails, 470, 471; St. James's, The Hague, 373; Stanley St. Peter, Wakefield, C.P., June 19; Wesleyan, Four Oaks, Birmingham, 214, C.P., Feb. 28, 236.

Cleveland House, Newmarket, 51.
Clifton College Chapel, Alterations and Additions to, 420-422, C.P., April 24.
Club, Addition to Balham Constitutional, 504.
Coins, A Comparison of English and Greek, 118.
Collins Hospital, Nottingham, 381-384, C.P., April 10.
Competitions: New Parliament Buildings, Wellington, New Zealand: (1st J. Campbell and C. Paton), 102; (2nd T. Turnbull and Son and J. S. Seddon); (3rd W. H. Gummer), 104; East Sussex Hospital, Hastings (1st Snell and Spoor), 166-167, C.P., Feb. 14; (2nd C. K. and T. C. Mayor), 167-169, 180, 181; (3rd Adams and Holden), 162, 169-171; Soane Medallion: Design for a Guildhall (Bertram Lisle), 262, 273, C.P., March 13 (Piet de Jong), 271, 273; North Country Schools, 224-228.

Concert Hall, Plan for, 321.
Concrete Greenhouses, 463.
Constantinople, Church of St. Sophia, C.P., June 12, 616-618.
Constitution Hill, London, Quadriga for Decimus Burton's Arch on, 56.
Conveniences, Derbyshire Type of, 624.
Cornice of South Side of Court, Château de Blois, 57.
Cornwall County Offices: A Premiated Design, 337.
Coroner's Court, L.C.C., High Street, Poplar, 323-325.
Cottages: Guildford, 61, 98.
Cottages and Laundry at Oakhill Road, Putney, S.W., 505.
Council House, New, Kiel, 309.
Council Offices, New, Newburn-on-Tyne, 2, 9-12.

County Hall, Reading, Berkshire, 338, 342, 346.
County Offices, Cornwall, A Premiated Design, 337.
Cram, Ralph Adams, Portrait of, 369.
"Crowshott," Highclere, Chimney-piece at, 608, 609.
Cupola of S. Carlo at Corso, Rome, 29.
Curtain, Theatre Français, Paris, Detail, 294.
Cuthbert's Buildings, Johannesburg, Supp. June 26.

DECORATION OF ST. PAUL'S CATHEDRAL, DESIGN FOR THE, 88, 89.

Delhi, Mogul Screen From, 648.
Dentile Floor, 332.
"Derry's Wood," Womersley, Surrey, Entrance Lodge to, 363; Drawing-room Chimney-piece, 647.
Details, Old and New: Altar Rails, Bolton-by-Bowland Church, Lancs., 152, 153; Bridge at Newbury, 74; Chimney-piece at "Crowshott," Highclere, 608, 609; Door to Chapel, Queen's College, Oxford, 634, 635; Gable End, West Mills, Newbury, 656, 657; Staircase at Redland Court, Bristol, 531, 532; Sculptured Panel, His Majesty's Theatre, Manchester; Woodwork in Pembroke College Chapel, Cambridge, 557-559.
"Deysbrook," Near Liverpool: Large Drawing-room at, 92; Detail of Ceiling, 93; Chimney-piece in Dining-room 261.
Donatello's "Gattamelata" at Padua, 92.
Door to Chapel, Queen's College, Oxford, 634, 635.
Doorway to Flats, No. 35, Harley Street, W., C.P., May 15.
Doorway to Lloyds Bank, Hampstead, N.W., 510, 511.
Drawings by Decimus Burton, 452.
Dundee Town Hall, Perspective Sketch of, 499.
Dutch Dwelling in Cape Colony, an Old, 577.
Dyer's Shop, Boulevard de Courcelles, Paris, 607.

EALING HOSPITAL, MEMORIAL BRONZE IN, 27.

Ealing, Pulpit in St. John's Church, 77.
Earl's Court, "Shakespeare's England" at, 543, 545, 546.
East Sussex Hospital, Hastings: 1st Premiated Design (Snell and Spoor), 166-167; 2nd Premiated Design (C. K. and T. C. Mayor), 167-169; 3rd Premiated Design (Adams and Holden), 162, 169-171.
Ecalpon (Drawn by Sir Charles A. Nicholson, M.A., F.R.I.B.A., C.P., March 27.
Edgbaston, Birmingham, House at, 567.
Edinburgh: 15 and 15a, Castle Street, C.P., Feb. 21, 208; New Police Headquarters and Weights and Measures Office, 274, 275; St. Andrew's Square, 135.
Egypt and Greece, Drawn by A. C. Conrade, 353.
Elementary Schools, Plans of, 623, 624.
Ely Cathedral, Key Plan of, 253; Octagon, 238, 254, C.P., March 6.
Epsom Parish Church, 528-530.
Equestrian Figure of the Duke of Wellington, for the Memorial in St. Paul's Cathedral, London, 100, 101, C.P., Jan. 24.
Eternit Slates and Other Roof Coverings, Fire Test with, 122.
Evanston, Illinois, U.S.A., House at, 173, 174.
Ewer, Rosewater, Design for Silver-mounted, 82.
Ewhurst, Surrey, "Hurtwood Edge," Details of Entrance Porch and Balcony, 570.

FACULTY OF MEDICINE AND CHEMISTRY, BORDEAUX, 295.
Firebricks Executed from Designs, by Alfred Stevens, 94-95.
Fireplace at Appleton Cross, 179.
Flats: 35, Harley-street, W., 492, 498; Detail of Staircase, 497; Doorway to, C.P., May 15; Proposed, Upper Baker-street, 400.
Fleet-street, Gate to Common Entrance Passage, 251.
Fountain in the Garden of the Villa D'Este, Tivoli, near Rome, 32.
Fountain, Sketch for a, by Oppenordt, 451.
"Foxbury," Chislehurst, Kent, Detail of New Terrace at, 389.
Frame House, American, Section Showing Construction of, 477.

CABLE END, WEST MILLS, NEWBURY, 656, 657.

Gantry for H.M. New Stationery Office, Stamford-street, S.E., 654.
Garden Pavilion, Design for a, 480, 481.
"Gate of India," on the Apollo Bunder, Bombay, 555.
Gate to Common Entrance Passage from Fleet Street, 251.
"Gattamelata" at Padua, Donatello's, 92.
Gensac, Nave of the Church at, 138.
Gerrards' Cross, Bucks., House at, 612-613.
Gilbert, Cass Portrait of, 35, 548.
Girault, Ch., Portrait of, Glasgow: New General Offices for the Steel Company of Scotland, Ltd., 379; Organ in St. Andrew's Hall, C.P., Jan. 3; Suspension Bridge, Clyde Place, 55.
Glencoe, Illinois, U.S.A., House at, 175.
Godalming Church, A Comparison of two Windows in, 118.
Gouldisham, Norfolk, House at, 466, 468.
Greenhouses Concrete, 463.
Grilles, Wrought-Iron, 283.
"Groote Constantia," The Main Gable, 576.
Groote Schuur, Rondebosch, Cape Town, Supp. June 26.
Guildford Cottages, 61, 98.
Guildhall, Designs for (Soane Medallion Competition), 262, 271, 273, C.P., March 13.

HAARLEM, HOLLAND, THE CATHEDRAL, 372.

Hague, St. James's Church, 373.
Hall, H. A., Portrait of, 342.
Hampstead Garden Suburb, Detail of House, 390.
Handsworth, Birmingham, King Edward VI. School for Girls, 632.
Handwriting, Specimen of Michelangelo's, 317.
Hatch, Serving, The Williams-Ellis, 279.
Hazlemere, "Redlands," 503.
His Majesty's Theatre, Manchester, Sculptured Panel for Facade, 560; Detail of Main Facade, 562, 563.
Holborn Town Hall, 346, 347.
Holliday, James S., Portrait of, 282.
Holy Trinity Church, Sloane Square, S.W., Detail of Chancel, 237.
Hong-Kong University, 461.
Hospital, Collins, Nottingham, 381-384, C.P., April 10.
Hospital, King's College, Denmark Hill, S.E., Details of, 297, 306, 307, C.P., March 20.
Hotel: Amelot, Paris, 58; D'Asseza, Toulouse 58; Maynard Arms, Bowditch, Leicester, 375.
House: At Edgbaston, Birmingham, 567; at Evanston, Illinois, U.S.A., 173, 174; at Garboldisham, Norfolk, 466, 468; at Gerrard's Cross, Bucks., 612-613; at Walton Heath, Surrey, 591; at Witley, Surrey, Chimney Stack on, 327; "Crundle Court," Dorset, 7; Derry's Wood, Womersley, Surrey, Entrance Lodge to, 463; Hampstead Garden Suburb, Detail, 390; "Hurtwood Edge," Ewhurst,

Surrey, Details of Entrance Porch and Balcony, 570; in a Monmouthshire Village, Design for an Open-air Living Room in, 218-220; in Broad Street, Hythe, Kent, Detail of an Old, 313; of Representatives, Rhode Island State Capital, 550; "Redlands," Near Hazlemere, 503; "Redlands," Wimbledon, 499, 500; "Shorne Hill," near Totton, Hampshire, 426, 427; Sylvestre, Hackney, N.E., 349; Wimpole Street, W., 501. Houses: at Wimbledon, Three, 502; Nos. 59 and 60, Lincoln's Inn Fields, 441; Small, "Hy-Rib" Construction as Applied to, 488; Terrace of Five, For a Small Seaside Town, 527, C.P., May 22; of Parliament, Budapest, 399; of Parliament, New, Stockholm, 517, 518, 524-526. Howarth, Dublin, Bungalow at, 488. Hull, Tramway Shed, 488. Hunt, William and Edward, Portraits of, 497. Huntington, U.S.A., Town Hall, 393. "Hurtwood Edge," Ewhurst, Surrey, Details of Entrance Porch and Balcony, 570. "Hy-Rib" Structures, 487, 488. Hythe, Kent, Detail of an Old House in Broad Street, 314.

INDIA, THE GATE OF, ON THE APOLLO BUNDER, BOMBAY, 555.

Inlaid LECTERN, 653. Insurance Offices, Phoenix Fire, South Parade, Leeds, 385, 386. Ipsamboul, The Temple of, Egypt, The Entrance Hall, May 29.

JOHANNESBURG, SOUTH AFRICA, CUTHBERT'S BUILDINGS: Henderson's Buildings; Post Office; Standard Bank Buildings, Supp. June 26.

KIEL, NEW COUNCIL HOUSE, 309. King Edward Memorial, Green Park, London, Model of, 314. King Edward VI. School for Girls, Handsworth, Birmingham, 632. King's College Hospital, Denmark Hill, S.E., 297, 306, 307, C.P., March 20. "Knoll, The," Leicester, Bedroom Corridor, 161. Knott, Ralph, Portrait of, 290.

L A D Y CHAPEL, LIVERPOOL CATHEDRAL, C.P., Feb. 7.

Laloux, V., Portrait of, 293. Lambeth Town Hall, 343, 344. Lamp Stands, Two Examples of, Modern, 119. Lamp Standard, Design for a, 90. Lead-Covered Bay to Business Premises, Leicester, 359. LECTERN, Inlaid, 653. Lecture Room, Metropolitan Museum of Art, New York, 551. Leeds, Phoenix Fire Insurance Offices, South Parade, 385, 386. Leicester, Lead Covered Bay in Business Premises in, 359. Library, New, Mill Hill School, 595; Reference, The Old Town Hall, Manchester, 242-244; and Art Gallery, Manchester, Competition Design for, C.P., April 3. Limoges, Church of St. Martial, Section Through Nave, 367. Lincoln's Inn Fields, London: Newcastle House, 439, 442, 444; Nos. 59 and 60, 441; No. 35, Chimney-piece in, 442; No. 35, Wrought-Iron Panel on Landing, 443. Little Theatre, West Forty-Fourth Street, New York, 622, 627-629. "Littlecroft," Oakley Park, Wheatstone, London, N., Chimney-piece in Drawing Room, 465. Liverpool, Extension to the City School of Art, 596. Liverpool Cathedral: 143-146, 194-198; Doorway from Lady Chapel to Vestries, 370; Lady Chapel, C.P., Feb. 7; Reredos in Lady Chapel, 188. Lloyds Bank, Rosslyn Hill, Hampstead, N.W., Entrance Doorway to, 510, 511. Lodge: "Chewton Glen," Christchurch, Hampshire, 621; "Derry's Wood," Womersley, Surrey, 363. Loggia, Villa Medici, Rome, View from the, 491. London County Hall: Plan of Principal Floor, 290; Plumb-Rule, Level, and Mallet Used in Laying Foundation Stone, 291. London: Monument to Commemorate the Foundation of, Design for, 483, C.P., May 8; Opera House, Kingsway, 245-247; University, Plan of Suggested Site for, 215. L.C.C. Coroner's Court, High Street, Poplar, 323-325. Lorsch Abbey Porch, 366. "Love and the Vestal" (Sculpture), 475.

MADONNA DI S. LUCA, BOLOGNA, 30. Manchester: His Majesty's Theatre, 562, 563; Library and Art Gallery, Competition Design for, C.P., April 3; Old Town Hall, 242-244. Margate, New Pavilion and Concert Hall, 581, 583, 584, C.P., June 5.

Marylebone, London, Design for New Municipal Buildings, 507. Maynard Arms Hotel, Bogworth, Leicester, 375. Memorial: Bronze, in Ealing Hospital, 27; Model of the King Edward, 314; Rhodes, Cape Town, Supp. June 26; to Queen Victoria at Nice, 416; Wellington, St. Paul's Cathedral, Equestrian Figure, 100, 101, C.P., Jan. 24. Merton College, Oxford, New Quadrangle, 664, C.P., June 26. Metropolitan Railway Offices, Baker Street Station, 401-405. Michel Angelo's Handwriting, Specimen of, 317. Mill Hill School, New Library, 595. Model of Welsh National Museum to be Erected in Cathays Park, Cardiff, 469. Mogul Screen from Delhi, 648. Monmouthshire House, Design for an Open-air Living Room in a, 218-220. Monument in an Open Place, Design for, 483, C.P., May 8. Monument and Landing Stage to a Riverside Town, Design for, 116. Municipal Buildings, Marylebone, London, Design for New, 507. Municipal Office Building, New York, Selected Design for, 288. Museum, Agricultural, Budapest, 396; at Nîmes, Main Entrance to the, 293; Great State, Amsterdam, 373; National, Budapest, 396; of Art, Metropolitan, Lecture Room, New York, 551; of Natural History, Paris, Entrance to Zoology Building, 288; Welsh National, Cardiff, Model of, 469.

NAME-PLATE, STONWARE, 655.

Name-plates in London, 575. Nénot, H., Portrait of, 293. New York, Little Theatre, 622, 627-629; Metropolitan Museum of Art Lecture Room, 551; Pennsylvania Station, 299, 301, 303, 304; Selected Design for Municipal Office Building, 288; Woolworth Building, 36-39. Newbury: Bridge at, 74; Gabb End, West Mills, 656. Newcastle House, Lincoln's Inn Fields, London, 439, 442, 444. Newmarket, Cleveland House, 51. Nice, Memorial to Queen Victoria at, 416. Nîmes, Main Entrance to the Museum at, 293. Niort, Design for Theatre at, 494, 495. Notre Dame du Port, Clermont Ferrand, 136, 137. Nottingham, Collin's Hospital, 381-384, C.P., April 10. Nuneaton, Bank Premises, 364.

OCTAGON, ELY CATHEDRAL, 238, 254, C.P., March 6.

Office Building, Municipal, New York, 288. Offices: Metropolitan Railway, Baker Street Station, 401-405; for the Steel Company of Scotland, Ltd., Glasgow, 379; of the City Gas Works, Berlin, 277; Wolfe Street, Stoke, 149. Onoporden Acanthium, 270. Open-air Living Room in a Monmouthshire House, Design for a, 218-220. Opera House, The London, Kingsway, 245-247. Operating Theatres, New Royal Infirmary, Bradford, Design for, 411. Organ in the St. Andrew's Hall, Glasgow, C.P., Jan. 3. Oxford, New Quadrangle, Merton College, 634, C.P., June 26; Queens' College, Door to Chapel, 634, 635.

PALACE OF THE EMPEROR FRANCIS JOSEPH ON THE BURGFRASS, BUDAPEST, 397.

Palatine, Rome, Plan of Private Basilica on the, 365. Palermo Museum, Stucco Decorative Work in the, 31. Pantheon, Rome, Measured Drawing of one Bay of the, 573. Paris: Apartment Houses, 64, 65, C.P., Jan. 17; Apse of the Madeleine, C.P., April 17; Design for New Church in Rue de Vanves, 493; Doorway in the Rue des Archives, 81; Entrance to Zoology Building, Museum of Natural History, 287; Shop-fronts, 604-607. Parliament: Houses of, Budapest, 399; New Houses of, Stockholm, 517, 518, 524-526. Parliament Buildings, Proposed New, Wellington, New Zealand: (1st J. Campbell and C. Paton), 102; (2nd T. Turnbull and Son, and J. S. Seddon), 103; (3rd W. H. Gummer), 104. Pascal, J. L., Portrait of, 293. Pavilion, Garden, Design for a, 480, 481; and Concert Hall, Margate, 581, 583, 584, C.P., June 5. Pembroke College Chapel, Cambridge, Details of Woodwork, 557-559. Pennsylvania Station, New York, 299, 301, 303, 304. Perth, Western Australia, St. George's House, 345, 356. Pharmacies, Old, Paris, 604.

Phoenix Fire Insurance Offices, South Parade, Leeds, 385, 386.

Plate, Centre: Organ in St. Andrew's Hall, Glasgow (A. B. Macdonald, Architect), Jan. 3; Church of St. Saviour, Lewisham, London, S.E. (Kelly and Dickie, Architects), Jan. 10; Apartment House, Boulevard Haussmann and Rue de Corcelles, Paris (Charles Lefebvre, Architect), Jan. 17; Covered Courtyard of a Royal Exchange (Prize Design by Louis de Soissons), Jan. 31; Lady Chapel of Liverpool Cathedral (G. Gilbert Scott, Architect), Feb. 7; Shop Front, 15 and 15a, Castle Street, Edinburgh (W. J. W. Todd, Architect), Feb. 21; Wesleyan Church and Schools, Four Oaks, Birmingham (Crouch, Butler and Savage, Architects), Feb. 28; The Octagon, Ely Cathedral (Drawn by A. B. Allen), March 6; Design for Guildhall (Soane Medallion Competition), by Bertram Lisle, March 13; Details of King's College Hospital, Denmark Hill, S.E. (W. A. P. I. F. R. I. B. A., Architect), March 20; Ecalpon (Drawn by Sir Charles A. Nicholson), March 27; Competition Design for Manchester Library and Art Gallery (Warwick and Hall, Architects), April 3; Entrances to Collins' Hospital, Nottingham, April 10; Apse of the Madeleine, Paris (Drawn by A. C. Conrade), April 17; Clifton College Chapel, Section Through Lantern (Nicholson and Corlette, Architects), April 24; Design for a Monument in an Open Space (By H. C. Bradshaw), May 8; Doorway to Flats, No. 35, Harley Street, W. (W. and E. Hunt, Architects), May 15; Design for a Terrace of Five Houses for a Seaside Town (by W. Harding Thompson), May 22; Entrance Hall of the Temple of Ipsamboul, Egypt (Drawn by A. C. Conrade), May 29; New Pavilion and Concert Hall, Margate (Ernest A. Borg and Stanley C. Ramsey, Architects), June 5; Church of St. Sophia, Constantinople: A Study of its Structure as Existing (Drawn by H. Prost), June 12; Church of Stanley St. Peter, Wakefield (W. D. Caroe, Architect), June 19; Buildings in the New Quadrangle, Merton College, Oxford (Basil Champneys, Architect), June 26. Plumb-Rule, Level, and Mallet Used in Laying the Foundation Stone of the London County Hall, 291. Pneumatic Sprayer for Insect-Destroying Solution (by R. Sumner and Co., Ltd.), 311. Police Headquarters and Weights and Measures Office, Edinburgh, 274, 275. Police Station, Gill Bridge Avenue, Sunderland, Detail of, 569. Poplar L.C.C. Coroner's Court, High Street, 323-325. Porch, Lorch Abbey, 366. Portraits: Burnham, D. H., 601; Champneys, Basil, 241; Cram, Ralph Adams, 369; Gilbert, Cass, 35, 548; Hall, H. A., 342; Holliday, James S., 282; Hunt, William and Edward, 497; Knott, Ralph, 290; Reilly, C. H., 115; Stevens, Alfred, 87; Warwick, Septimus, 342; Yerbury, R. F., 246. Post Office: Johannesburg, Supp., June 26; Pretoria, Supp., June 26. Pretoria: Cathedral Interior, Supp., June 26; College, Main Entrance, Supp., June 26; Old Legislative Assembly, Supp., June 26; Post Office, Supp., June 26. Proscenium for "The Queen's Masque of Indians," 454. Pulpit in St. John's Church, Ealing, London, 77. Putney, S.W., Design for Cottages and Laundry at Oakhill Road, 505. Pyrford, Surrey, "Wintergreen Wood," 41.

QUADRANGLE, NEW MERTON COLLEGE, OXFORD, 664, C.P., June 26.

Quadrangle for Decimus Burton's Arch, Constitution Hill, London, 56. Queen Victoria Memorial, Nice, 416. Queen's College, Oxford, Door to Chapel, 634, 635.

RADIATOR CASE, 93, MORTIMER STREET, W., 508. Rameses the Great, Colossal Statue of, 440. Reading, Berkshire County Hall, 338, 342, 346. Redland Court, Bristol, Detail of Staircase at, 531, 532. "Redlands," near Hazlemere, 503. "Redlands," Wimbledon, 499, 500. Regent Street Polytechnic, London, 157. Regent's Park, London, New Building for the Zoological Society, 110. Reilly, Professor C. H., Portrait of, 115. Reredos in Lady Chapel, Liverpool Cathedral, 188.

Rhode Island State Capitol, Hall of the House of Representatives, 550. Rhodes Memorial, Cape Town, Supp., June 26. Richelleu, Plan of the Town of, 59. Riquier, Abbey of, 366. Rome, Cupola of S. Carlo at Corso, 29; The Pantheon, Measured Drawing of Bay, 573; Private Basilica on the Palatine, Plan of, 365; St. Peter's, Section Through, 453; Villa Medici, 491. Royal Exchange, Covered Courtyard of a, C.P., Jan. 31.

ST. BONIFACE, ST. BUDEAUX, DEVON, 586, 587. St. George's de Boscherville, 368. St. George's House, Perth, Western Australia, 345, 356. St. George's Schools, Hanover Square, 625. St. James's Church, The Hague, 373. St. Mark's Campanile, Venice, 446-448, C.P., May 1. St. Paul's Cathedral, Design for the Decoration of, 88, 89. St. Paul's Cathedral, Wellington Memorial in, 91. St. Peter's, Rome, Section of, 453. St. Saviour, Plan of the Church of, Milan, 367.

St. Sernin, Toulouse, Nave Arcade, 367. San Francisco, D. H. Burnham's Scheme for the Lay-Out of, 602-603. Sand-Washing Apparatus, 49. Savennieres, Apse to the Church at, 138. Scaffolding, Belgian, 659-661. School: at Whitley Bay, 228; First-Premiated Design for, at Walker Gate, Newcastle-on-Tyne, 226, 227; for Girls, King Edward VI., Handsworth, Birmingham, 632; of Art, City, Extensions to the, Liverpool, 593; Proposed Elementary, Wallend, 224, 225. Schools: Elementary, Plans of, 623, 624; St. George's, Hanover Square, London, 625; Transvaal, Types of, Supp., June 26. Sculpture: "Love and the Vestal," 475. Serving Hatch, The Williams-Ellis, 279. "Shakespeare's England" at Earl's Court, 543, 545, 546. Shed for Midland Railway, Constructed with "Hy-Rib," 487. Sheffield Improvement Scheme, 140. Shipping Offices, Rue Scribe, Paris, 635. Shop-Front, Cardiff, Design for a, 631; 15 and 15a, Castle Street, Edinburgh, 208, C.P., Feb. 21. Shop-fronts, Paris, 604-607. Shrewsbury, New Altar Rails, St. Chad's Church, 470, 471. "Shorne Hill," near Totton, Hampshire, 426, 427. Sleeping Porch to House at Evanston, Illinois, U.S.A., 173. Soane Medallion Competition Designs, 262, 271, 273, C.P., March 13. Sprayer for Insect-Destroying Solution, Pneumatic, 311, 425. Staircase, No. 35, Harley Street, W., 497; at Redland Court, Bristol, Detail of, 531, 532; Wisconsin State Capitol, 544. Standard Bank Buildings, Johannesburg, Supp. June 26. Stanley St. Peter, Wakefield, Church of, C.P., June 19. Station, Pennsylvania, New York, 299, 301, 303, 304. Statue of Rameses the Great, Colossal, 440. Stèle: in the British Museum, 269; of Simikylon, Acrotherian of, 269; Sepulchral, 270. Stevens, Alfred, Portrait of, 87; Work by, 82, 88-95, 100, 101, C.P., Jan. 24. Stockholm, New Houses of Parliament, 517, 518, 524-526. Stoke, Offices, Wolfe St., 149. Stoneware, Name-Plate, 655. Street Name-Plates, London, 578. Stucco Decorative Work in the Palermo Museum, 31. Sunderland, Detail of Police Station, Gill Bridge Avenue, 569. Sundial on House at Baldock, Herts, 1. Suspension Bridge, Clyde Place, Glasgow, 55. Sylvestre House, Hackney, N.E., 349.

TEMPLE OF IPSAMBOUL, EGYPT, THE ENTRANCE HALL OF THE, C.P., May 29.

Tea Shop, Rue de Sevres, Paris, 606. Terrace of Five Houses, Design for, 527, C.P., May 22. Theatre: at Niort, Design for, 494, 495; Français, Paris, Detail of Curtain, 294; His Majesty's, Manchester, 560, 562, 563; The Little, New York, 622, 627-629. Tivoli, near Rome, Fountain in the Garden of the Villa D'Este, 32. Toulouse, St. Sernin, Nave Arcade, 367. Town Hall, Dundee, Perspective Sketch of, 489; Huntington, Long Island, U.S.A., 393; Lambeth, 343, 344; Holborn, 346, 347; Old, Manchester, 242-244. Tramway Shed, Hull, 488. Transvaal Schools, Types of, Supp., June 26.

UNION STATION, WASHINGTON, U.S.A., SIDE ENTRANCE, 213.
University, Hong-Kong, 461; London, Plan of Suggested Site for, 215.
Unter den Linden, Berlin, 415.

VENICE, ST. MARK'S CAMPANILE, 446-448, C.P., May 1.
Villa in the Argentine Republic, 495.

WAKEFIELD, CHURCH OF STANLEY ST. PETER, C.P., June 19.
Walker Gate, Newcastle-on-Tyne, School at, 226, 227.
Wall Construction with "Hy-Rib," Sections of, 487.

Wallsend, Proposed Elementary School, 224, 225.
Walton Heath, Surrey, House at, 591.
Warwick, Septimus, Portrait of, 343.
Washington, U.S.A. Union Station, Side Entrance 213.
Wellington Memorial, St. Paul's Cathedral, London, 91, 100, 101, C.P., Jan. 24.
Wellington, New Zealand, New Parliament Buildings, 102-104.
Welsh National Museum to be Erected in Cathays Park, Cardiff, Model of, 469.
Wesleyan Church, Four Oaks, Birmingham, 214, C.P., Feb. 28, 236.

West Mills, Newbury, Gable End, 656.
Whiteley's New Premises, 199-203.
Whitley Bay, School at, First-Pre-miated Design for, 228.
Willington, near Eastbourne, "The Hoo," 28.
Wimbledon, Three Houses at, 502.
Window, A Modern, With Casements by G. Wragge, Ltd.
Windows in Godalming Church, A Comparison of two, 118.
"Wintergreen Wood," Pyrford, Surrey, 41.
Wisconsin State Capitol, The Grand Staircase, 544.
Witley, Surrey, Chimney Stack on

House at, 327; Park, Surrey, Reinforced Concrete Bridge, 490.
Woolworth Building, New York, 36-39.
Wrought-Iron Grilles, 283.
Wrought-Iron Panel on Landing No. 35, Lincoln's Inn Fields, 443.

YERBURY, F. R., PORTRAIT OF, 248.

ZOOLOGY BUILDING, MUSEUM OF NATURAL HISTORY, PARIS, ENTRANCE TO, 287.
Zoological Society, New Building, Regent's Park, London, 110.

ILLUSTRATIONS, CONCRETE AND STEEL SECTION.

BRIDGE, REINFORCED CONCRETE, KING'S CROSS STATION, LONDON, 432-435.

CHIMNEY, REINFORCED CONCRETE, AT RECREATION HALL, SOUTHALL, 233.
Chimney Stack, Reinforced Concrete, Drury Lane, London, 437-438.
Coal Store and Gantry, Rochdale Gas Works, 643.
Concrete Fountain in Central Park, Los Angeles, 642.

DELHI, IRON PILLAR AT, 542.
Domé of the Eton Memorial, 639-641.

ELEVATORS, REINFORCED CONCRETE, 130-131.

Eton Memorial: View of Library Showing Dome, 639; Steelwork of Dome, 640, 641.

FACTORY AT WITTON, BIRMINGHAM, 126-128.
Fountain, Concrete, in Central Park, Los Angeles, 642.

CANTRY, COAL STORE AND, REINFORCED CONCRETE, ROCHDALE GASWORKS, 643-645.

IRON PILLAR AT DELHI, 542.
KING'S CROSS STATION, REINFORCED CONCRETE BRIDGE, 432-435.

LOS ANGELES, CONCRETE FOUNTAIN IN CENTRAL PARK, 642.

PILLAR AT DELHI, IRON, 542.

RACECOURSE STAND, REINFORCED CONCRETE, WARWICK, 538, 539.
Recreation Hall, Southall, 230-233.
Reinforced Concrete: Bridge, King's Cross Station, London, 432-435; Chimney at Recreation Hall, Southall, 233; Chimney Stack, Drury Lane, London, 437-438; Racecourse Stand, Warwick, 538-539; Grain Elevators, 130, 131.
Rochdale Gasworks, Reinforced Concrete Coal Store and Gantry, 643-645.

Roof Shield in Reinforced Concrete Tunnel Construction, 540.

SOUTHALL RECREATION HALL, 230-233.
Steel and Concrete Construction, A New Type of, 540.

WAREHOUSE AND FACTORY AT WITTON, BIRMINGHAM, 126-128.
Warwick, Reinforced Concrete Racecourse Stand, 538, 539.
Witton, Birmingham, Factory at, 126-128.

Y.M.C.A., NEW CENTRAL BUILDING, TOTTENHAM COURT-ROAD, LONDON, W., 16-23.

ARTISTS AND AUTHORS.

ACKWORTH AND SHEPPARD, 612, 613.
Adams, H. Percy, F.R.I.B.A., and Charles Holden, A.R.I.B.A., 162, 169-171.
Adams, Maurice B., 255.
Alexander, George, 263.
Allen, A. B., 238, 253, 254, C.P., March 6.
André, Jules, 287.
Andrews, Edward S., B.Sc. Eng. (Lond), 16.

BABB, S. NICHOLSON, 475.
Bacon, Francis, 608, 609.
Barhart, George P., 593.
Barnish, F. J., 179.
Bateman and Bateman, 364.
Behar, Maurice, 435.
Belcher, John, R.A., and J. J. Joass, F.R.I.B.A., 110, 199-203.
Bentley, John F., Son, and Marshall, 647.
Bidlake, W. H., M.A., 162.
Billing, D. Herman, 309.
Bolton, Arthur T., 570.
Bone, Muirhead, 55.
Borg, Ernest A., C.E., 581-584, C.P., June 5.
Bowcher, Frank, 27.
Bowie, P. G., 329.
Braddell, Darcy, 523.
Bradshaw, H. Chalton, 483, C.P., May 8.
Breffendille, Ch., 605.
Brewer, C. C., F.R.I.B.A., 299.
Brierley, Walter H., F.S.A., F.R.I.B.A., 7.
Brodhurst, Bernard R. Penderel, 74.
Buckland and Haywood-Farmer, 567.
Bunney, Michael, A.R.I.B.A., 147.
Burton, Decimus, 452.
Butler, C. McArthur, F.C.I.S., 406.
Burnham, D. H., and Co., 214, 303.

CALBET, A., 294.
Campbell, J., 102.
Caroe, W. D., F.R.I.B.A., F.S.A., 586, 587, C.P., June 19.
Champneys, Basil, B.A., 604, C.P., June 26.
Charlewood, Henry C., F.R.I.B.A., 131.
Chatwin, J. A., and Son, 632.
Clark, Chas. W., A.R.I.B.A., P.A.S.I., 400-405.
Cocking, W. Cyril, 535.
Cole, Leopold E., 51.
Colcutt and Hamp, F. and A.R.I.B.A., 595.
Colthurst, W. B., 381-384.
Conrado, A. C., 353, 440, C.P.'s, April 17, May 29.
Cram, Ralph Adams, 553.
Cratnez, Edward, 2, 9-12.
Crews, Bertie, 245-247.
Crouch Butler and Savage, 214, C.P., Feb. 28, 236.
Cubitt, Horace, A.R.I.B.A., P.A.S.I., 633.

DARCH, JOHN, F.S.I., 106.
Daubney, C. A., F.S.I., A.R.I.B.A., 299.
Daumet, The Late H., 292.
Davies, W. E., 116.
Dawber, E. Guy, F.R.I.B.A., 390.
Dawson, Nelson, 27.
Dear, Frank T., 558.
Deas, F. W., F.R.I.B.A., 187.
Déglane, M., 64, 65.
D'Espouy, Hector, 294.
Dotti, Carlo Francisco, 30.
Douglas, Rae, 578.
Dove, F. L., L.C.C., 142.
Drury, O. G. C., A.M.I.C.E., 400-405.

EDEN, F. C., 249.
Ellis, Chough, Williams, 279.
Ellis, S. H., M.I.C.E., 129.
Emery, Burkett J., 126-128.
Everard, Son and Pick, 359 375, 411.

FABER, OSCAR, B.Sc., A.M.I.C.E., 329.
Falkner, Harold, 98.
Farini, H., 35.
Farquharson, Horace, and Richardson and Gill, 560-563.
Field, Horace, F.R.I.B.A., and Evelyn Simmons, 510, 511.
Flack, Martin, M.A., M.B., B.Ch., 209.
Fletcher, Hanslip, 135.

GILBERT, CASS, 35-39, 544.
Gillespie, J. Goff, F.R.I.B.A., 379.
Gimson, Ernest W., 655.
Glass, Marcus K., 480, 481.
Goldcutt, J., 453.
Gummer, W. H., 104.
Gunn, Edwin, A.R.I.B.A., 308.

HADFIELD, SIR ROBERT, F.R.S., 541.
Hall, Edwin T., F.R.I.B.A., 374.
Hall, Lawrence K., F.R.I.B.A., and Sidney K. Greenslade, A.R.I.B.A., 639-641.
Hall, Warwick and, A.A.R.I.B.A., 337, 338, 342-349, 356, 357, C.P., April 3.

Harvey, William, 579.
Hawksmoor, Nicholas, 635.
Hill, Leonard, M.B., F.R.S., 209.
Hoffmann, Ludwig, 277.
Horder, P. Morley, 466, 486.
Horsley, Gerald C., F.R.I.B.A., 69-71, 183.
Hulot, J., 491.
Hunt, William and Edward, 492, 497-507, C.P., May 15.

INCALLS AND HOFFMAN, 622, 627-629.

JACK, GEORGE, 465.
Jennings, Arthur Seymour, 252.
Johansson, A., 517, 518, 524-526.
Johnson, R. F., 591.
Jones, Burne, 652.
Jones, Captain Adrian, 56.
Jones, Hall, and Cummings, 27, 77.
Jones, Inigo, 454.
Jong, Piet de, 271, 273.

KEARNS, R.M., F.S.I., 457.
Keen, Arthur, F.R.I.B.A., C. F. A. Voysey, and, 350, 465.
Kelly and Dickie, C.P., Jan. 10.
King, A. E., 538, 539.
Knott, Ralph, 290.

LEFEBVRE, CHARLES, 65, C.P., Jan. 17.
Leigh and Orange, 461.
Lisle, Bertram, 262, 273, C.P., March 13.
Littlehales, Henry, 39.
Longden, Reginald T., 149.
Lucas, Geoffrey, F.R.I.B.A., 1.
Lutzens, Edwin L., F.R.I.B.A., 28, 314, 327.

MACARTNEY, MERVYN, E., F.R.I.B.A., F.S.A., 470, 471.
Macdonald, A. B., C.P., Jan. 3.
Mackennal, Bertram, A.R.A., 314.
Mackenzie, A. G. R., 172, 230-233.
McKim, Mead and White, 288, 301, 304, 550, 551.
McQueen, H. A., 74, 153.
Mallows, C. E., F.R.I.B.A., 218-220.
Marrast, J., 607.
Marshall and Tweedy, 224-228.
Martineau, M., 494-495.
Mayor, C. K. and T. C., 167-169, 180, 181.
Messer, A. A., Cyril B. Tubbs, and, 41.
Meyer, John F., 557.
Milburn, W. and T. R., and Wills and Anderson, 569.
Monson, E. C. P., F.R.I.B.A., F.S.I., 225.
Montford, Paul R., 389.
Murray, Colin Hay, 251.

NENOT, H. P., 607.
Newton, Percy E., 622.
Nicholson, Sir Charles A., M.A., F.R.I.B.A., C.P., March 27.
Nicholson and Corlette, F.F.R.I.B.A., 420-422, C.P., April 24, 528-530.
Noël, Martin, 495.

OTIS, W. A., AND EDWIN H. CLARK, 173-175.

PASCAL, JEAN LOUIS, 295.
Paton, C., 102.
Pite, Professor Beresford, 158.
Pite, William A., F.R.I.B.A., 297, 306, 307, C.P., March 20.
Plumbe, Rowland, F.R.I.B.A., 18.
Prestwich, Ernest, 573.
Prost, H. C.P., June 12.
Pupont, H., 64-65.

RAMSEY, STANLEY C., A.R.I.B.A., 581-584, C.P., June 5.
Raphel, Max, 293.
Rawlings, W. R., 482.
Rees, Joseph, 49.
Reilly, Professor C. H., M.A., A.R.I.B.A., 115.
Richardson and Gill, Horace Farquharson and, 560-563.

Riley, W. E., F.R.I.B.A., 323-325.
Robson, Philip A., A.R.I.B.A., 625.
Ryves, Reginald, A.M.I.C.E., M.C.I., 335.

SARDOU, PIERRE, 493.
Schinkel, Karl Friedrich, 165.
Scott, A. Alban H., M.R.San.Inst., 333.
Scott, G. Gilbert, C.P., Feb. 7, 143-146, 188, 194-196, 370.
Sedding, J. D., 237.
Seddon, J. S., T. Turnbull and Son, and, 103.
Serpotta, Giacomo, 31.
Simpson and Lawson, 67.
Smith and Brewer, F.F.R.I.B.A., 469.
Snell, A. Saxon, F.R.I.B.A., 423.
Snell, John Saxon, and Stanley M. Spoor, 166, 167, C.P., Feb. 14.
Snow, Alan L., A.R.I.B.A., 371.
Soissons, Louis de, C.P., Jan. 31.
Stevens, Alfred, 82, 87-95, 100, 101, C.P., Jan. 24.
Stokes, Leonard, 182.
Strahan, John, 531, 532.
Strange, E. F., 87.
Stubbs, A. J., 176.
Sullivan, Louis H., 96, 97.

THATCHER, A. G. H., 659.
Thompson, W. Harding, 527, C.P., May 22.
Thornhill, Gerald, A.M.I.C.E., 76.
Thorp, William H., F.R.I.B.A., 385, 386.
Todd, W. J. Walker, C.P., Feb. 21, 208, 634.
Townsend, C. Harrison, F.R.I.B.A., 451.
Tubbs, Cyril B. and A. A. Messer, 41.
Turnbull, T. and Son, and J. S. Seddon, 103.
Turner, Thackeray, F.R.I.B.A., F.S.A., 117.

VENARDI, CLAUDIO, 32.
Verity, Frank T., 157.
Voysey, C. F. A., and Arthur Keen, F.R.I.B.A., 350.

WARREN, EDWARD, F.S.A., F.R.I.B.A., 221, 490.
Warwick and Hall, A.A.R.I.B.A., 337, 338, 342-349, 356, 357, C.P., April 3.
Waterhouse, Paul, M.A., F.R.I.B.A., 205.
Webb, Maurice E., M.A., 389.
Webber, W. H. Y., 513.
Whitaker, Hall and Owen, 639-641.
Whitehouse, W., 663.
Willcox, W., M.I.C.E., 401-405.
Williamson, J. A., A.R.I.B.A., 274, 275.
Willink and Thicknesse, 596.
Willmott, Ernest, F.R.I.B.A., 426, 427.
Wills and Anderson, W. and T. R. Milburn and, 569.
Wilson, Henry, 237.
Wittet, G., 555.
Woodward, William, F.R.I.B.A., 611.
Workman, G. C., M.S.C., M.C.I., 25.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 3rd, 1912.

Volume XXXV.

No. 885



SUNDIAL ON HOUSE AT BALDOCK, HERTS.

GEOFFRY LUCAS, F.R.I.B.A., ARCHITECT.

(From "*Recent English Domestic Architecture.*" See page 7.)



NEW COUNCIL OFFICES, NEWBURN-ON-TYNE: MAIN ENTRANCE. EDWARD CRATNEY, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

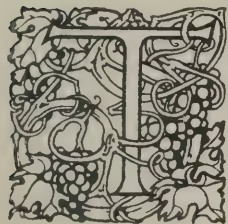
JANUARY 3rd, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35, No. 88.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

London Architecture in Relation to Roads and Bridges.



THE Report of the London 'Traffic Branch of the Board of Trade, recently published, has more relation to architectural subjects than would appear at first sight from its title. For increased accommodation for traffic means new streets or the widening of old ones, which implies the removal and re-erection of the

buildings which line them or, what is equally important, the placing and aligning of buildings so that they shall not form obstacles to future enlargements. And, London lying on two sides of a river, the dimensions and placing of new bridges, or the enlargement of old ones, enter into the problem, and form in an architectural sense a very important element in it. The study of such a Report compels us to regard London as a whole, as in itself a kind of architectural design, got together in the past in a very haphazard and accidental kind of way, but capable of being treated with more comprehension and foresight in the future.

As far as roads are concerned, the necessity for this comprehensive action on a predetermined scheme is the burden of the Report, and it is graphically illustrated in the first of the maps appended to the Report, which shows in dark grey the existing main roads out of London, and in red the proposed new ones. The main object in the new roads is to increase the number of large roads forming direct through routes from north to south and from east to west, or from the centre to the country in these directions. Some of the suggested new roads in the map afford object-lessons as to the importance of exercising foresight in regard to possible future routes. Among the existing roads leading northward out of London are Cambridge Road and the road to Enfield, distant from each other about an average of a mile and a half, but between these is shown in red a "new Cambridge Road" leading northward in the same direction, in fact crossing the existing Cambridge Road at Cheshunt, and meeting it finally about two miles further north. Why this addition of a third road north between two existing ones? We turn to the text of the Report for explanation, and find that the difficulty and delay in rendering the two existing roads adequate, by pulling down houses and setting back the building line, would be so great that it would be preferable to drive a new wide road through the space between them that is not yet built upon. This is only a sample of what is likely to happen in other cases. As is remarked in the introduction of this portion of the Report, "there is no time to be lost, and unless local co-operation can be ensured as town-planning schemes mature, the possibility of constructing some of the proposed roads may vanish, leaving it to the next generation to seek other routes for the growing traffic, and to construct or widen roads at greatly increased cost." Some of the districts through which the proposed new main roads would pass have already sketched out "town-planning schemes," but none have reached a stage at which it is known whether, and to what extent, their roads can be brought into conformity with the general scheme. Surely this is a most extraordinary and

illogical state of things, that isolated road schemes should be under consideration in suburban districts, without any attempt to see how they will work into a general scheme for main lines of traffic. The only remedy for this is to have a central authority who should confer with local authorities, so as to arrive at some understanding as to the precise line to be adopted for main roads, and the manner in which the local scheme may be adapted to form part of a general scheme of suburban planning. In the meantime, to quote again from the Report, "a direction in which assistance from public funds towards the improvement of roads near London might be given with the greatest advantage, would be in arresting the growth of obstructions which, if suffered to increase, would add to the difficulty of widening existing roads. *It is most desirable that building lines should be prescribed without delay on all main radiating roads.*" The italics are ours; the advice cannot be made too prominent. It is then suggested that where local authorities are unable to meet the expense of the claims for compensation which the laying down of building lines may give rise to, assistance from public funds would save a much larger expenditure a few years hence.

For the same reason no doubt as in the last-named case, we find on the suggestion map a new road westward from Paddington to Uxbridge, continuing the line of Euston Road and Marylebone Road, which in themselves look like the beginning of a good east to west main road, but have no adequate continuation; and it seems that some authorities are disposed to destroy even the present advantages which those roads possess for widening, in the existence of fore-courts in front of the building line. The short story of this affair, as given in Mr. W. E. Riley's appendix to the Report, is astounding. In connection with some new building in part of the Euston Road, the L.C.C. superintending architect defined the building line as that of the main line of buildings behind the fore-courts or gardens. The Tribunal of Appeal reversed this decision, and defined it as the line of the one-story shops which project in front of some of the houses up to the back line of the pavement. The High Court confirmed this decision, but the Court of Appeal reversed it, and the House of Lords upheld the Court of Appeal's decision. Thus it appears that, but for the Court of Appeal and the House of Lords, we should have had a precedent set for destroying the whole opportunity of converting Euston and Marylebone Roads into the commencement of a wide route westwards out of London.

Something might perhaps have been said in the Report, which deals mainly with the larger question of main roads through and out of London, about the necessity for minor improvements in the way of direct routes. London is still full of small *cul-de-sac* streets which seem as if they ought to lead from one important thoroughfare to another, but lead nowhere; and one is reduced to roundabout routes from one important street to another, where there ought to be direct communication. It is a kind of improvement which could only be carried out by very slow degrees, but it is a subject that ought to be thought of.

The most interesting part of the Report in an architectural sense is that which refers to proposed new bridges, as these must materially affect the architectural aspect of London, though this side of the question, naturally perhaps, is not touched upon in a Report dealing ostensibly with

questions of traffic. Still, seeing that the President of the Board of Trade is known to take a great interest in the architectural improvement of London, one might have hoped that this consideration would not have been entirely lost sight of. In regard to the proposed St. Paul's Bridge, we learn from the Report that the bridge is to have "five steel arches"; this is referred to as a thing settled, and there is only too much reason to fear that we are to have another engineer's bridge of the same type as Blackfriars. Every effort ought to be made, by those who have any influence with the authorities and the public, to get something better than this done, and to insist on the employment of an architect to design the visible portion of the bridge, as far as appearance and details are concerned. It would be far better to have a granite bridge, to repeat if possible the monumental majesty of London Bridge. If Southwark Bridge is also to be rebuilt as a steel bridge (as to which nothing is said in the Report), there may perhaps be something to be said in favour of making the St. Paul's Bridge a steel one also; we should then have three steel girder bridges in succession, flanked at either end by the monumental structures of Waterloo and London Bridges; that would be a symmetrical kind of arrangement, though we should much prefer to see the new bridges both built of granite, and their effect as additions to London architecture would be much finer. If, however, we must have the inferior effect of a steel girder bridge thrust upon us, let it at least be an artistically designed one. The new Vauxhall Bridge has shown that, with the assistance of an architect, it is possible to make a steel girder bridge artistically interesting and beautiful, but that end will not be attained if the design is left to an engineer. The Report takes cognizance of the dispute as to the line of St. Paul's Bridge, and also refers to the recent decision in regard to it as a point settled, and to the evidence of the three architects called in by the Corporation, who confirmed that body in their intentions. The Report dismisses the subject with the remark that, "Taken in conjunction with the proposed widening of the churchyard, the undertaking will be a metropolitan improvement of the first magnitude." It might have been so; it has been spoiled.

Southwark Bridge has undoubtedly been injured for practical purposes of traffic by the heavy gradients both of the bridge and its approaches. It was built at a time when the subject of gradients was not so carefully considered as it is now. But the bridge itself is a remarkable structure; more so than is generally recognised. It was built in 1814 from the designs of Rennie, the designer of London and Waterloo Bridges, and is remarkable as being a cast-iron structure, the spans of which are actually built as arches, in the usual sense of the word; arches with voussoirs of cast-iron instead of stone or granite. They have covering pieces at the joints, and the arches are connected by lateral cross-bracing; but they are arches and not trussed girders, and it is such an unusual and bold experiment in iron construction that it is a pity to lose it. The treatment of the details—railings, etc.—is simple and good, and the whole structure has a very grand effect when viewed from the steps at the side, below the level of its roadway. There is no doubt, however, that in consequence of its bad gradients it must be removed and rebuilt; and to rebuild it on the same principle would be a rather old-fashioned proceeding. It is to be feared, however, that it will not be replaced by anything so effective and so dignified in appearance.

The suspension bridge at Lambeth has long been under interdict for heavy traffic, and there is no doubt that it ought to be replaced by a more stable structure. In its design, in an architectural sense, there is nothing to complain of, for the large standards over which the chains are carried are frankly treated as iron-work, with no concealment or false ornament, and, simple as it is, it is in far better taste than the gewgaw and pretentious suspension bridge at Chelsea, or the absurd treatment at the Tower Bridge, where the suspension chains are carried apparently across small stone-built offices at the approaches to the bridge, which the chains would pull down at once if their apparent support was the real one. The real reason why Lambeth Bridge has been left so long is because at present

it is not on any main line of street traffic. It is now proposed to apply to Parliament during the present year for powers to erect a new bridge, which it is proposed to make a steel bridge 48 ft. wide. As a reason for urgency it is claimed that this bridge is on the direct line of route from Victoria to the Tower Bridge. This is hardly accurate; on the Surrey side it is the most direct line of route to London Bridge, hardly to the Tower Bridge; and on the Middlesex side there is practically no route at all to it from Victoria, from which it is separated, after Horseferry Road is traversed, by a congeries of small streets at all kinds of angles. To make it really useful in the manner proposed, the straight part of Horseferry Road would have to be widened and then continued in a straight line to Victoria Station. The bridge would then make part of a really important thoroughfare, so important, that we are disposed to think the proposed width of 48 ft. would ultimately be found to be inadequate. But a large new street between the bridge-head and Victoria is an absolute necessity if the bridge is to play this important part in London traffic.

The section of the Report dealing with bridges concludes with a recommendation of the proposals which have been made (not by any authority so far) to remove Charing Cross Station to the other side of the river and substitute a wide bridge for general traffic for the present railway bridge. It is indeed high time that this idea should be seriously taken up by the London County Council, for it would be one of the greatest possible London improvements. Considering the great and increasing importance of Waterloo Station, it is perfectly absurd that there should be no means of vehicular access to it from central London except by going a long way round by the Strand and Waterloo Bridge one way, or by Parliament Street and Westminster Bridge the other way; so absurd that it seems a wonder that we have put up with it for so long. No improvement suggested in the Report is of more importance than this, and it should in fact have been rather more strongly emphasised.

Kingston Bridge.

IT is announced that the work of widening Kingston Bridge, long talked of, is to be put in hand early this year. The present bridge is only 24 ft. wide between the parapets; it is to be increased to 55 ft.; wider than necessary for present purposes, for the traffic over the bridge is not very large; but it is as well, no doubt, to provide for any possible future changes in the neighbourhood. It is satisfactory to reflect that the idea at first entertained of actually destroying this fine stone bridge and substituting a steel one, under the usual plea of economy, has been abandoned in deference to the strong representations that were made by various artistic and architectural societies and individuals, and it is now stated that "one of the conditions insisted on is that the present architectural features of the bridge shall be retained." This is rather a vague sentence; we are not told who "insists," nor exactly what is meant by "retaining the architectural features of the present bridge." The suggestion which was made by those who wished to save the situation was that the actual facing stones of the present bridge could be taken down, and re-erected as the facing of the widened structure. There is no difficulty in doing this, and by this means the architectural appearance of the present bridge, as a part of the Thames scenery at this point, would be maintained. It must be remembered that no little of the beauty of the lower Thames is derived from the fine character of its eighteenth-century stone bridges, and a new bridge, even of stone or granite, has not the same effect or the same associations as the old one. It is important therefore that we should have the actual masonry of the existing bridge replaced, and we do not feel any assurance that this will be done. The phrase about the "present architectural features" may only mean that we are to have a modern restoration; and the statement that the work is to be carried out under the direction of Mr Mott, "the architect for the widening of Blackfriars Bridge," prompts the

observation that Kingston Bridge is a very different matter from Blackfriars Bridge. The latter is essentially an engineering structure, and its widening could interest no one except in a structural sense. Kingston Bridge is an erection of architectural beauty and interest, and an architect ought to be employed to see that these qualities are preserved.

A Hampshire Statue.

VISITORS to Petersfield, in Hampshire, may remember the curious drab-coloured statue which occupies a position in the centre of the Market Place, opposite the church. This statue, says the "Morning Post," formerly belonged to Lord Hylton, but a few months ago, when his Petersfield property was disposed of, it was purchased by the Urban District Council at what was regarded as "a bargain price." The statue is cast entirely of lead in from 15 to 20 pieces, and its subject is William III. of England, mounted on horseback. The statue has an interesting history. In 1731 a movement was started in London for the erection of a statue to William, but though funds were forthcoming the scheme was vetoed by the Common Council for political reasons. This caused much comment throughout the country at the time, and as a protest equestrian statues to the King were erected in several parts, among the most important being Rysbrack's equestrian figure at Bristol and Scheemakers' at Hull. The Petersfield statue, the sculptor of which is unknown, was erected by Sir William Jolliffe, then member for the town, and it was gilded and placed in front of his house in the New Way. The figure is attired as a victorious Roman general, with a wreath of bays about his forehead, seated on a rearing horse, which is kept in position by an iron prop. In 1815 it was moved from the New Way to its present position, and on that occasion it was given a coat of drab paint, which has been renewed from time to time. Soon after its recent purchase it was closely examined by Mr. H. Inigo Triggs, A.R.I.B.A., of Liphook, who found that it was in such a state of disrepair that it might collapse at any time. Many people interested in this survival of leaden statuary were alarmed at the prospect, and it has now been decided to appeal for £350 in order to restore the statue in accordance with an expert's specifications. The appeal is signed by Captain P. W. Seward (Chairman of the Urban District Council) and Mr. Inigo Triggs (who is acting as hon. secretary). An effort is to be made to remove the drab paint, but no decision has been arrived at as to whether the statue shall be gilded again or bronzed.

A Real London University.

FOR some years past, we have lost no opportunity of urging the necessity for providing London University with a worthy building. It has always seemed to us to be no less than scandalous that a university with so fine a reputation should be homeless, and that London, lacking worthy and dignified university buildings, is to that extent lamentably and disgracefully incomplete. It is most humiliating to be compelled to tell the enquiring foreign visitor that the University of London is a lodger on sufferance in the Imperial Institute. At length London, probably shamed into activity by the examples of provincial cities, is about to take action, or so at least it may be supposed from the tenour of the fourth report of the Royal Commission on University Education in London, of which the substance is printed in another part of the present issue. That report seems to leave no option. "We think," say the reporters, "that whatever its future constitution may be, it is a matter of national importance that the University of London should be recognised as a great public institution." The discovery, though somewhat belated, is none the less welcome, and the same may be said with equal emphasis of the deduction from it: "We think it is fitting and right, and will be universally accepted,

that such an institution should have for its headquarters permanent buildings, appropriate in design to its dignity and importance, adequate in extent and specially constructed for its purposes, situated conveniently for the work it has to do." Further—as if in confirmation of what we have said as to the stimulus of provincial example—it is added that "a great hall will be required for university ceremonies and for the many important occasions—such as the meetings of International Congresses and other great educational gatherings—when it is fitting that the university should act as host. The McEwan Hall in Edinburgh and the Whitworth Hall in Manchester are worthy of the universities to which they belong, and even in so comparatively small a town as Reading a spacious hall for academic assemblies was built in 1906. But for the University of London, founded in 1836, the only accommodation of the kind at present available is a temporary wooden structure erected in 1887 for the opening of the Imperial Institute by her Majesty Queen Victoria. It appears to us totally unfit for the uses it has to serve." The addition of that last sentence is rather perplexing. One is at a loss to conceive whether it betrays an absence of all sense of the ludicrous, or whether, on the other hand, it should be regarded as a master-stroke of sardonic humour. On presentation-day, when hundreds, in cap and gown, assemble in a wooden shed to receive their degrees, it is difficult to tell whether the predominating feeling is disgust or amusement at the incongruity of environment. A proper development of the sense of humour should years ago have saved London from the shame of having no settled abode for its university; but, by way of compensation, we should now get a bigger and a better building that would formerly have been probable. The reporters very naturally refer to the question of site. They think that "as large a site as possible should be obtained in a central position and buildings erected for a reconstituted university, which would be the visible sign of its recognition and acceptance as a great public institution." The site question is pretty certain to give rise to controversy. As our contribution towards a solution of this important problem, we would suggest, off-hand, that the site of the old General Post Office Buildings would be in most respects eminently suitable, and would be quite as truly central and accessible as, say, Kingsway, which also suggests itself as an appropriate situation.

Our Edition de Luxe.

THE annual special issue of this Journal is now on sale, price one shilling nett. The leading feature is a series of examples of Garden Suburb Houses, selected from Hampstead and Gidea Park. Of these representative designs, forty plates are given, each plate showing specially prepared plans, and special photographs of the elevations. The Garden Suburb movement represents the first definite and practical expression of the town-planning movement, and, *a fortiori*, an earnest endeavour to give architectural character to comparatively small dwellings. To what extent this attempt has been successful our special issue affords, for the first time, adequate means of forming an opinion; the examples having been selected quite independently, and purely on their merits. Students of town planning, and of the æsthetic and other problems involved, will therefore find this comprehensive set of plates invaluable. The issue contains also a rapid review of the architectural events of the year; an important special section in which the most notable buildings of the year are described and illustrated; and another section in which are shown some of the most important examples of reinforced concrete construction in 1911. This sumptuously printed volume, with its wealth of fine half-tone photo-engravings, printed on art paper, should be in the hands of every architect, builder, and town-planner. Orders should be forwarded without delay, as the volume cannot be reprinted. Former special issues have been rapidly exhausted, and have consequently changed hands at greatly increased prices. Hence the wisdom of securing copies while they are to be had at the original charge.

New Year Honours.

THE New Year Honours List does not, so far as we are aware, contain a single name that is of special interest from our particular point of view, except that of Mr. Courtauld Thomson, who is a director of Holloway Brothers, Ltd., and of the Limmer Asphalte Paving Company, Ltd., who receives a knighthood. There seem to be three main reasons for conferring these distinctions. There is the purely personal reason, as when a man attains to distinction in some particular line, whether it be of industry, talent, or philanthropy; the political expediency reason, as when a man is rewarded upon partisan considerations, whether of personal service or of money contributions; and what may be termed the institutional reason, as when the recipient is a leading representative of his profession. There are, of course, other motives, some of them more or less casual or accidental. In the present instance, learning has been recognised in the persons of a few more or less eminent men of science, and (very doubtfully) literature in the bestowal of knighthoods on one or two writers; and Art is honoured by the knighthood bestowed on Mr. Frederick Wedmore, the art-critic and authority on etchings. Architecture, however, seems to have been for the nonce ignored.

The Loan Exhibition at Burlington House.

THE Royal Academy contrive to keep up the interest of these winter loan exhibitions in a surprising manner.

After all that we have seen there already, the present exhibition has still a new interest, divided mainly between Reynolds and the late Mr. Abbey. The first room is devoted entirely to Reynolds, and shows him in a new, or at least unusual light, as eight of the pictures are ideal or emblematic figures designed for the west window of New College Chapel at Oxford. At that time nothing was known in England as to the special character required for stained glass design; the window was treated just as if it were a large easel picture, and as a stained glass window it is a failure; but the subjects for it, seen as pictures on canvas, are admirable; the figures of "Faith," "Justice," "Hope," etc., have great dignity and nobility of style and design. The two finest things in the room, nevertheless, are portraits in Reynolds's usual style; his well-known portrait of himself, belonging to the Royal Academy, and the group portrait of the Brummel children, one of whom afterwards became celebrated or notorious as "Beau Brummel"; an open-air picture which seems to combine the best qualities of Gainsborough and Reynolds. To the works of Abbey three galleries are devoted, one containing oil paintings, including "O Mistress Mine," which contains one of the most beautiful and expressive female heads ever put upon canvas; the two others are devoted to Abbey's immense series of studies of Shakespeare characters in black and white, mostly pen drawings. These were done for a series of Shakespeare articles in one of the American illustrated magazines. We do not by any means always agree with his conception of the characters, but the drawings show a great power of expression and composition in pen and ink, and argue a wonderful power of rapid work, to have been the production of one man, as an offshoot to his more serious work in oil-painting.

The second room, as usual, contains a good many works of the Dutch school, among others a fine Gerard Dow, two or three examples of Rembrandt's lesser works, and an interesting work by the little-known sixteenth-century painter Henri de Bles, called "Civetta" (under which name he appears in the catalogue), an "Adoration of the Magi," remarkable for its curious and carefully painted detail of costumes and architecture. The third room contains one or two doubtful Titians, a beautiful half-length portrait of a lady by Hoppner, one or two very interesting Isle of Wight landscapes by Turner, and a Richard Wilson landscape not quite in his best way. In the fourth room we have three Morlands, Kneller's charming portrait of Nell Gwynne (in which Kneller shows as a much better painter than his rival Lely, whose portrait of another frail lady hangs next to it); Rubens's large work "The Tribute Money," well known

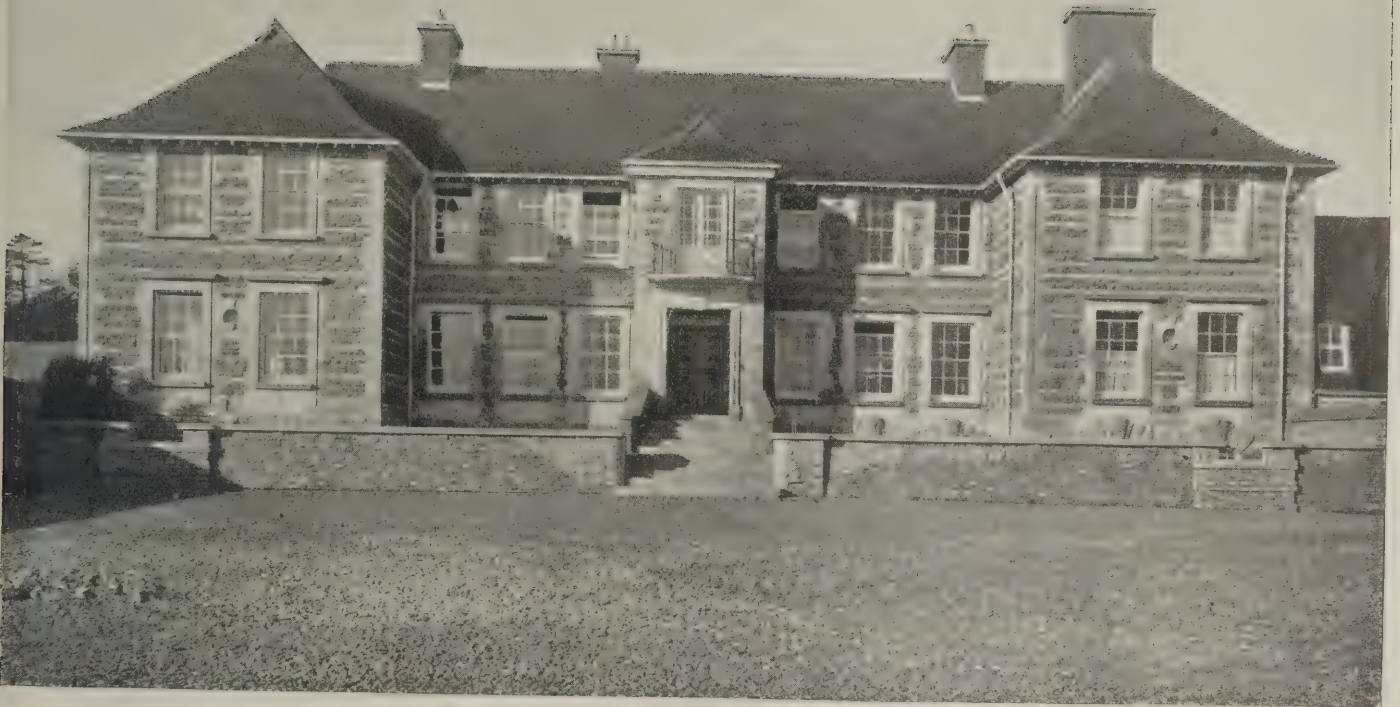
from engravings; and two landscapes by the French eighteenth-century painter Joseph Vernet, remarkable for their fine effects of sunlight; Vernet is a landscape painter who ought to be better known than he is. Among the miscellaneous contents of the room known as "the water-colour room" is a first-rate Ostade—"Boors Drinking," a composition of many figures, remarkably effective. There are plenty of other pictures of historic or artistic interest. But we rather wish the Academy would follow up the excellent precedent they set some years ago, of devoting one room of the loan exhibition to ancient work of applied art—silverwork, jewellery, ironwork, etc.

New Buildings at Cambridge.

SEVERAL additions to the colleges of the University of Cambridge are now being completed. They include the new buildings for the Museum of Archaeology and Ethnology, in continuation of the Law School, the Squire Law Library and Sedgwick Memorial Museum in Downing Street (Mr. T. G. Jackson, R.A., architect); new literary lecture rooms between the Cavendish Laboratory and the new examination rooms (Messrs. Hubbard and Moore, F.F.R.I.B.A., architects); a new students' block at Ridley Hall (Mr. William Wallace, architect); students' chambers on the western side of Queen's College; and a new court at Emmanuel College on a site to the north-east of Emmanuel Street. In the Museum of Archaeology and Ethnology, on the second floor, has been placed the central part of the old Classic choir screen from Winchester Cathedral designed by Inigo Jones. The fragments were found stored away in the triforium, whence they had to be removed during the repair which is now in progress at the cathedral. Though many parts were missing, enough remained to enable Mr. Jackson to recover the design. There was no place in Winchester for reconstructing the entire screen, even had it been perfect; and the Dean and Chapter have given the central part, for which alone there was room, to be built into this new museum, where it forms a doorway between the part now being built and the future extension backwards.

Southwark Cathedral.

A CORRESPONDENT of the "Times," Mr. Henderson-Livesey, makes a proposal which ought to excite some public interest, in regard to the opening out of the site of what he justly describes as being at present "a hidden cathedral" at Southwark. There is now a line of warehouses between the cathedral and the river; the proposal is that these should be cleared away and a wide space thrown open between the cathedral and the river, leaving the cathedral standing in an open area, bounded by London Bridge, the railway, and the river. This would not only bring the cathedral into sight as a fine object from the river, but would provide an open space in a neighbourhood where it is much wanted. The proposal is one well worth consideration, and should not be lost sight of. The writer goes further in suggesting that this might be regarded as the commencement of a scheme for building an embankment on the south side of the river, similar to that on the north. The erection of the London County Hall necessitates an embankment or quay there; the Southwark scheme would involve making one adjoining London bridge; the work would be crowned by embanking the whole margin of the river between those two points, thus making the river side accessible on both banks, and substituting a quay and a roadway along the bank for the present motley array of warehouses and other buildings, and doing away with the unsightly mud banks seen at low water. What the south bank of the Thames is, between Westminster and Blackfriars Bridges, the north bank of the Thames once was. If the change has had such a splendid result on one bank of the river, it is surely worth while to endeavour to realise the same effect on the opposite bank. One practical result would probably be that the river, with convenient landing-places on both banks, would again become a high way for passenger traffic in steamers.



"CRUNDLE COURT," DORSET. WALTER H. BRIERLEY, F.S.A., F.R.I.B.A., ARCHITECT.
From "Recent English Domestic Architecture."

"RECENT ENGLISH DOMESTIC ARCHITECTURE."

The proprietors of the "Architectural Review" have just published another Special Issue devoted to recent English domestic architecture, price 5s. nett. Like its predecessors of 1908, 1909, and 1910, it embraces a great variety of designs, but perhaps the present issue is particularly noteworthy for including work by lesser-known men, as well as the familiar names of the profession; it is noticeable, too, that there are a large number of houses of moderate size, such as the average man might wish to build. Without exception, the houses are illustrated by means of photographs and plans; which is unquestionably the best manner of presenting such a collection, more especially as the facile artist, with pen, pencil, or brush, is able to give (as we know from the equivocal perspective) an appearance to a house which is quite different from the actual building.

The new volume should be in the hands of all who wish to keep in touch with the latest work of English domestic architects. Though some well-known names are unavoidably absent, there is an abundance of good work included. Mr. Ernest Newton, Mr. Brierley, Mr. Macartney, Mr. Guy Dawber, Messrs. Detmar Blow and Billerey, Professor Reginald Blomfield, Mr. Geoffrey Lucas—to mention a few—are represented by houses never illustrated before by means of photographs. As examples, we give on this page a delightful house by Mr. Brierley, "Crundle Court," Dorset, and on page 1 a sundial on a house at Baldock by Mr. Geoffrey Lucas, this latter illustration being one of many similar details included in the volume.

The issue is excellently produced, and we are glad to draw the attention of readers to a volume so attractive and useful as this one is. English domestic architecture, as carried out by the more capable architects of to-day, is a constant pleasure to study. It stands apart from the domestic architecture of all other

countries by reason of its inherent qualities, its homeliness, and its conspicuous charm; so that a new volume wherein the most recent examples are attractively shown is assured of a wide and cordial welcome at the hands of all lovers, amateur as well as professional, of delightful architecture.



"CRUNDLE COURT," DORSET: GROUND-FLOOR PLAN.

THE HOUSING OF LONDON
UNIVERSITY.

The fourth report of the Royal Commission on University Education in London, which has just been issued [Cd. 6015], deals with the question of the housing of London University. The Commission was appointed on May 26th, 1910, and consists of Lord Haldane (chairman), Lord Milner, Sir Robert Romer, Sir R. L. Morant, Mr. Laurence Currie, Dr. W. S. McCormick, Mr. E. B. Sargant, and Mrs. Creighton. The substance of the report appears below, the cross-headings being unofficial:—

Scope of the Enquiry.

The Commissioners were appointed to enquire into the working of the present organisation of the University of London, and into other facilities for advanced education (general, professional, and technical) existing in London for persons of either sex above secondary school age; to consider what provision should exist in the Metropolis for University teaching and research; to make recommendations as to the relations which should in consequence subsist between the University of London, its incorporated Colleges, the Imperial College of Science and Technology, the other Schools of the University, and the various public institutions and bodies concerned; and, further, to recommend as to any changes of constitution and organisation which appear desirable; regard being had to the facilities for education and research which the Metropolis should afford for specialist and advanced students in connexion with the provision existing in other parts of the United Kingdom and of his Majesty's Dominions beyond the Seas. The Commissioners having been empowered to report their proceedings from time to time, submit the conclusion they have arrived at with regard to a matter which they have carefully considered, and upon which evidence has been taken.

Permanent Building Necessary.

The report proceeds:

(1) The matter to which we refer is the housing of the University of London.

(2) It has become clear to us as our enquiry has proceeded that the inception of any scheme for the reorganisation of the University which we may be able to recommend to your Majesty, and which Parliament may sanction, will be seriously delayed after that sanction is obtained unless steps have previously been taken to provide for the University as reconstituted a site and buildings more convenient and adequate than those it now occupies.

(3) We think that, whatever its future constitution may be, it is a matter of national importance that the University of London should be recognised and accepted as a great public institution. In our opinion the extent and value of its work already entitle it to that position; and we are sure that the work which will rightly fall to it, as it increasingly fulfils its purposes in the future, will more and more entitle it to public recognition and support.

(4) We think it is fitting and right, and will be universally accepted, that such an institution should have for its headquarters permanent buildings, appropriate in design to its dignity and importance, adequate in extent and specially constructed for its purposes, situated conveniently for the work it has to do,

bearing its name and under its own control.

Inadequacy of Present Buildings.

(5) The evidence before us shows that the premises now occupied by the University in the Imperial Institute Buildings at South Kensington do not fulfil all these conditions, and could not be made to do so. The site of the Imperial Institute is not sufficiently central for the University. It lies on the western side of the circumference of a circle which embraces most of the University Institutions of importance, and we have had evidence that its remoteness has occasioned much inconvenience and loss of time to those who are concerned with the working of the University, and has exercised a harmful effect on its development. The buildings are shared with the Imperial Institute and are known by that name, and they have never become associated with the University in the minds of the public. The care of the fabric is in the hands of your Majesty's Office of Works, so that the University is not master in its own house.

(6) With regard to the accommodation provided, we have taken evidence, and have visited and inspected the buildings. We are satisfied that the accommodation is insufficient in extent and in many respects unsuitable for the purposes for which it is used. We are not prepared, at present, to make recommendations with regard to all the purposes for which accommodation should be provided in the central buildings of a reconstituted University. Some University purposes would be better provided for elsewhere. Such provision, for instance, as will be required for central examinations—examination halls, laboratories, waiting-rooms, and other accommodation—would be much more economically made by selecting an accessible site in a less costly position than that which will be necessary for the headquarters of the University.

A Great Hall Required.

(7) But about some things there can be no doubt. A great hall will be required for University ceremonies and for the many important occasions—such as the meetings of International Congresses and other great educational gatherings—when it is fitting that the University should act as host. The McEwan Hall in Edinburgh and the Whitworth Hall in Manchester are worthy of the Universities to which they belong, and even in so comparatively small a town as Reading a spacious hall for the academic assemblies was built in 1906. But for the University of London, founded in 1836, the only accommodation of the kind at present available is a temporary wooden structure erected in 1887 for the opening of the Imperial Institute by her Majesty Queen Victoria. It appears to us totally unfit for the uses it has to serve.

(8) Proper accommodation must clearly be provided for the Senate, for committees, for the principal, and for the headquarters staff.

(9) It is also, in our opinion, of great importance that suitable accommodation should be provided for the meetings of Convocation and for its officers. The University ought to be able to rely confidently on the sympathetic interest of its graduates in all that concerns its well-being, but, in a city as great as London is, this interest is apt to be dissipated and lost unless it is given a centre in which it can be focussed and find ex-

pression. We therefore consider that the graduates of the University should have a place of their own within the University walls.

(10) Further, we think it is a matter of great importance that accommodation—which is entirely wanting at present—should be available for developing the social and corporate life of the University. A club-house for the Union Societies, headquarters for the Officers' Training Corps, rooms for professors, graduates, and students are required in the central buildings of a University whose colleges and schools are widely dispersed.

(11) We are not yet prepared to make final recommendations with regard to the scope and purposes of the library of the University, as distinct from those in its constituent institutions and from the large public libraries of London, but we think it is clear that the University should house within its central buildings certain collections of books, and that convenient reading-rooms will be required for those who are engaged in particular researches. We therefore recommend that provision should be made at headquarters for library accommodation.

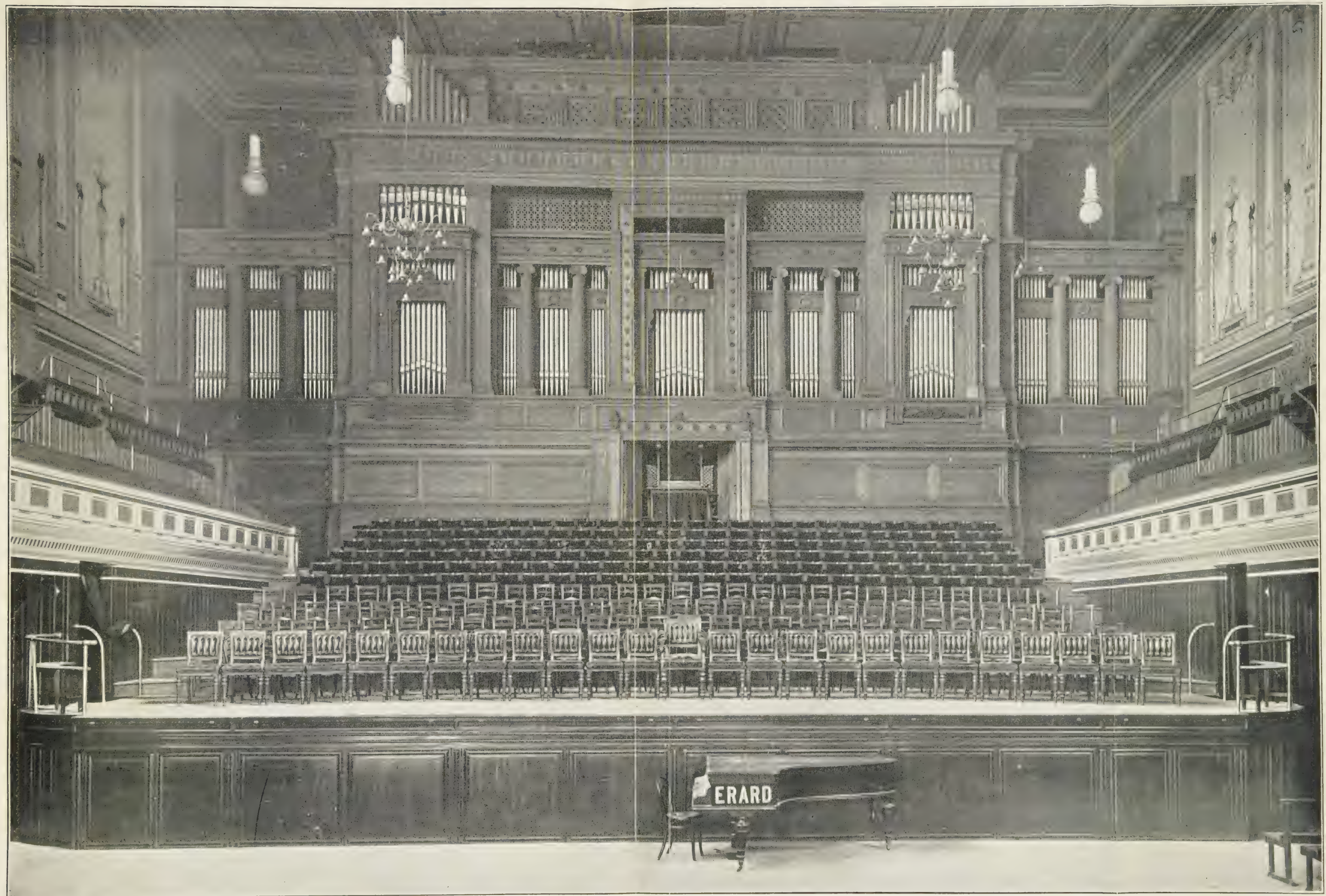
Laboratories and Lecture Halls.

(12) It has been urged upon us that provision should also be made at or near the headquarters of the University for laboratories for advanced work in a number of departments of science, which are either beyond the scope of the teaching institutions connected with the University, or for which it is thought supplementary provision ought to be made by the University itself; and, further, that lecture halls should be available for central University lectures. We are of opinion that several, though not a large number, of commodious lecture halls should be provided in the central buildings to be first erected, but the other question referred to in this paragraph is so intimately connected with the whole scheme of the reorganisation of the University that it is impossible for us to say anything about it without entering upon subjects which would carry us beyond the limits of this report. We think, however, that the purposes for which central accommodation would be useful and desirable, if it can be provided, are so extensive and varied that it would be greatly to the advantage of the University if a site could be secured of sufficient size to allow a large measure of freedom in determining the nature of the buildings to be erected, including such scientific institutes as have been referred to, if they should be found to be necessary or desirable. Indeed, the early acquisition of a site is particularly urgent, because the amount of available land in the central parts of London is always limited, and if any opportunity of obtaining a suitable site which may happen to arise should be missed, many years might elapse before such an opportunity occurred again. It is this consideration which has led us to the conclusion that we should report immediately upon this matter.

The Question of Site.

(13) Generally, and in conclusion, we think it is in the public interest, as well as in the interest of the University of London, that as large a site as possible should be obtained in a central position, and buildings erected for a reconstituted University which would be the visible sign of its recognition and acceptance as a great public institution. A great University is not self-supporting, and can





ORGAN IN ST. ANDREW'S HALL, GLASGOW. A. B. MACDONALD, ARCHITECT.

never be so. As an institution for learning in which liberal education, instruction in the methods of advancing knowledge in a wide range of subjects, and the highest professional training are combined with large scope for the free exercise of thought and with full opportunity and encouragement for the systematic prosecution of research, it can never exist financially on the fees of its students. The University of London is entitled to, and already receives, public contributions from Imperial and local funds, and your Majesty's Government has also been responsible for the housing of it throughout its history. But far more is needed than the minimum accommodation and maintenance required by the University for carrying on its routine work, and the University of London, like other Universities in this country, must depend to a large extent for the liberal support necessary for its full development upon the endowments of private benefactors. We think such benefactors are to be found if a purpose is presented to them which approves itself to their minds as honourable and useful in a high degree, and our enquiry has impressed us so forcibly with the almost unlimited possibilities of the University of London in the future, that we cannot easily conceive a more splendid opportunity than its endowment and the provision of a noble and suitable building for its home afford for the liberality of the citizen.

The report is signed as follows:—
Haldane of Cloan (chairman), Milner, Robert Romer, Robert L. Morant, L. Currie, W. S. McCormick, E. B. Sargent, Louise Creighton, and John Kemp and H. Frank Heath, joint secretaries.



NEW COUNCIL OFFICES, NEWBURN-ON-TYNE. EDWARD CRATNEY, ARCHITECT.

NEW COUNCIL OFFICE, NEWBURN.

In this issue we publish exterior and interior views of this building, which has been executed under the supervision of Mr. Edward Cratney, architect, 88, Station Road, Wallsend-on-Tyne, whose designs were placed first in an open competition, and illustrated in this paper on October 6th, 1909. The whole of the external facings are in 2½ in. hand-made red sand stocks, from Messrs. Wray and Sons, of York. The roofs are covered with Til-

berthwaite green slates, second quality of rough texture; and the stonework throughout is entirely from the Denwick quarries, Northumberland.

The general contractor was Mr. Thos. Clements, Jesmond, Newcastle; stone carving by Mr. T. Hughes, Newcastle; plumbing and sanitary work, lead rain-water pipes and heads by Messrs. R. Allison and Sons, Gateshead; heating, wrought iron balustrading and gates, by Messrs. Emley and Sons, Ltd., Newcastle;

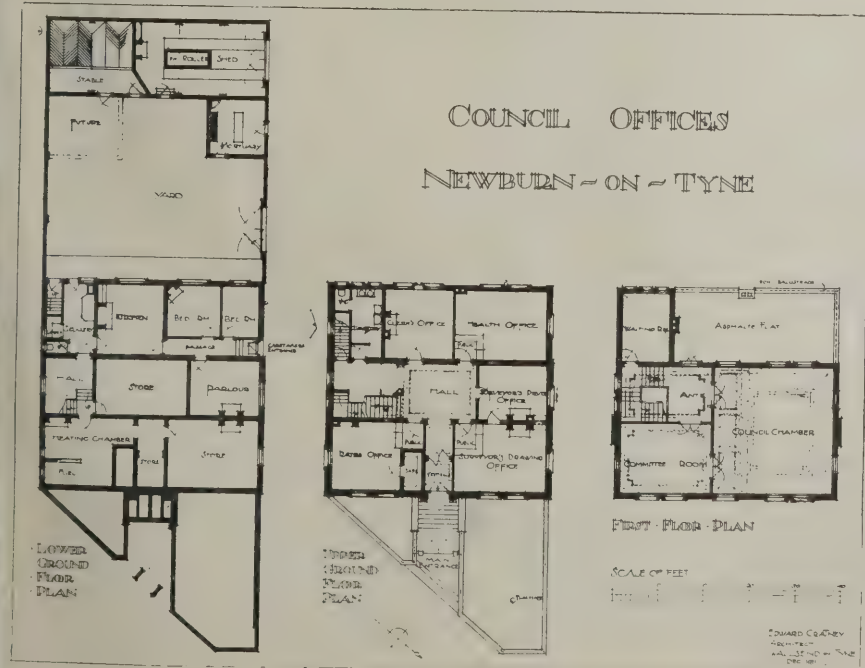
electric lighting by Messrs. Robson and Coleman, Newcastle. The plaster decorations were modelled and executed by Mr. John Ferguson, Newcastle-on-Tyne. The terrazzo flooring is by Messrs. Emley and Sons, Newcastle; and all the interior oak woodwork to the council chamber and committee-room, and the furnishings throughout, are by Messrs. Robson and Sons, Ltd., Newcastle. The whole of the interior walls and ceilings were treated with Hall's distemper.

OUR PLATE.

Organ in St. Andrew's Hall, Glasgow.

The subject of our Centre Plate this week is the organ in St. Andrew's Hall, Glasgow. The case is a noble and eminently satisfactory conception based on Classic lines. It was erected by Messrs. James Morrison and Sons, of Polmadie, Glasgow, to the design of Mr. A. B. Macdonald, City Engineer. The wood used in its construction is oak, and the approximate dimensions are: Width 75 ft., height 40 ft., depth 20 ft. There are no speaking pipes in front, an omission to be deplored from the standpoint of the purist in design. Unfortunately, it is not always possible or convenient to dispose satisfactorily of speaking pipes in the front of an organ.

Organ-case design is a subject worthy of far more attention than it usually receives. There is no reason why an organ should not form part of a decorative scheme in buildings which call for such treatment. If architects in particular would give more consideration to the requirements and limitations of organ



construction, they would soon realise how very necessary it is to leave ample head-room and space for planting the pipes.

The instrument in St. Andrew's Hall, Glasgow, is a four-manual and pedal organ, having 106 draw knobs, inclusive of couplers, which are distributed over the various departments. It has three-balanced *crescendo* pedals, one each to swell and solo organs and one over the entire organ. Tonally magnificent, it represents a remarkable achievement in organ building. It was built by Messrs. Lewis and Co., Ltd., of Ferndale Road, Brixton, who have been responsible for the design and erection of many large organs all over the country.

COMPETITIONS.

The Manchester Infirmary Site Problem.

The discussion on the utilisation of the Infirmary site was resumed at the meeting of the Manchester Junior City Council last week. Councillor Derwent Simpson, a member of the Infirmary Site Committee of the Corporation, took part in the debate. Arguing that there is no divorce between the æsthetic and the utilitarian, he stated that the Infirmary Site Committee of the City Council had kept that ideal before them, and proceeded to demonstrate how, in his opinion, they had succeeded so far as the matter now stood. After six years' study of the question he was still of opinion that the only solution was that which the com-

mittee aforesaid had recommended. He then gave figures which showed that only about thirty per cent. of the pictures comprising the permanent collection can be exhibited at the Mosley Street Gallery, while large numbers of objects of art, all well chosen and most of them gifts to the citizens of Manchester—examples of sculpture, embroidery, textiles, and reproductions by various methods of pictures—are either stowed away (often in most unsuitable places) or scattered about in most haphazard fashion. As for the Reference Library, his advice was for those who cared to be convinced of its unsatisfactory state to go and see, not merely the large reading room, but the smaller rooms, where accommodation is at present exceedingly deficient for special classes of books applicable to sections of industry in the district.

Councillor Alexander Porter said that the disposal of the present Exchange was a factor altogether ignored, and as regarded the proposed new one, hardly a member in the senior body had dared to speak of the scheme from the commercial point of view, but rather as the lesser of two evils. Some speakers that evening had talked very lightly of the transfer of the Exchange to Piccadilly, but he thought it no consolation to owners and traders in the vicinity of the present building that rateable values, rentals, etc., in the new centre would be equally profitable to other persons at that new centre.

Several other members took part in the discussion, which was again adjourned, and apparently we are not much nearer

to a decision on the dependent question of what is to be done with regard to the Libraries and Art Gallery for which the recent competition was held.

New Parliament Buildings, Winnipeg.

The High Commissioner for Canada (17, Victoria Street, London, S.W.) has received from the Minister of Public Works for Manitoba seventy-five copies of the conditions of the competition for the above new buildings. Architects can obtain copies on application.

The Halifax Town Planning Competition.

Eight sets of plans have been submitted for the town planning competition at Halifax, in which Mr. J. H. Whitley, M.P., offered awards amounting to £150. Professor Adshead, of the Department of Civic Design, Liverpool University will visit Halifax shortly to go over the areas concerned, and afterwards will consider the merits of the various plans.

King Edward Memorial at Holyrood.

The Executive Committee appointed in connection with the King Edward Memorial at Holyrood met on December 26th in the Council Chamber, Edinburgh. Lord Provost Brown presiding over a fairly large attendance of members. It was resolved to invite competitive design for the memorial at a cost of £15,000. Subscriptions have already been received amounting to more than £12,000, and it is expected that a sum of £15,000 will be realised. Should that sum be exceeded it will be possible to enlarge the scope



NEW COUNCIL OFFICES, NEWBURN-ON-TYNE: THE COUNCIL CHAMBER. EDWARD CRATNEY, ARCHITECT



NEW COUNCIL OFFICES, NEWBURN-ON-TYNE: DETAIL OF CEILING DECORATION
IN COUNCIL CHAMBER.

of the memorial, but meantime the aim of the Executive Committee is £15,000. It was further decided to invite seven architects to submit designs—three in Edinburgh, two in Glasgow, one in Aberdeen, and one in Inverness—but as it was not definitely known whether all would agree to act, the names were meanwhile withheld. It was considered that a fair representation of Scottish architects would be thus able to submit designs, and a sum of £50 is to be awarded to each sending in plans. A period of about three months will be allowed for the preparation of the plans, and on their receipt the committee will, with the help of an assessor who is yet to be appointed, go over the list and make a selection, which would be subject to the approval of the King.

LIST OF COMPETITIONS OPEN.

JANUARY 6TH, 1912. PUBLIC LIBRARY, STAFFORD.—The actual building is not to cost more than £4,000. Enquiries were to be sent to the Town Clerk, Stafford, not later than November 25th, and designs must be sent in by January 6th. The Borough Engineer states that applicants for particulars should have enclosed £1 deposit. Mr. Henry T. Hare, F.R.I.B.A., is assessor.

JANUARY 6TH, 1912. CENTRAL HALL, OFFICES, AND CARETAKER'S HOUSE, BOLTON.—The Lancashire and Cheshire Miners' Federation invite architects in practice on their own account within a radius of 25 miles of the Town Hall, Bolton, to submit designs in competition for the above. The Committee of the Federation have appointed as assessor Mr. Jonathan Simpson, F.R.I.B.A., of Bolton. The premiums offered are £50 and £25 for the two best designs in order of merit as adjudged by the assessor. Conditions and instructions will be sent to architects on application to Messrs. Fielding and Fernihough, Solicitors, 7, Fold Street, Bolton, accompanied by a deposit of one guinea (which is returnable on fulfilment of conditions).

JANUARY 8TH, 1912. WORKMEN'S DWELLINGS, BANBURY.—The Town Council of Banbury invite designs for workmen's dwellings. Applications for particulars (to be accompanied by a deposit of 10s., returnable on usual terms) to be sent not later than January 8th to Arthur Stockton, Town Clerk, Town Hall, Banbury.

JANUARY 8TH—MARCH 15TH. TOWN PLANNING, PRESTATYN.—Designs for laying-out the Prestatyn Estate are invited. Premiums of £50, £30, and £20. Application (with 10s. 6d. deposit, returnable) to be sent by January 8th to Lord

Aberconway and the Trustees of the Prestatyn Estate, 33, Henrietta Street, Strand, W.C. Designs by March 15th. Judge, Mr. H. V. Lanchester, F.R.I.B.A.

JANUARY 9TH, 1912. PUBLIC HALL, SPENNYMOOR.—Competitive designs are invited by the Spennymoor U.D.C. for a public hall, market, and offices. Premiums, £50, £25, and £10, first premium to merge in commission. Particulars (deposit £2 2s., returnable on usual conditions) from F. Badcock, Clerk to the Council, 3, James Street, Spennymoor.

JANUARY 9TH. TECHNICAL SCHOOL, MAGHERAFELT.—The Magherafelt Technical Instruction Committee invite competitive designs for a technical school proposed to be erected in Magherafelt, the total expenditure, including provision of sewerage and water supply, not to exceed £1,200. The successful competitor will supervise work and be paid a commission of 5 per cent. on the building contract sum. Designs, bearing only a nom de plume, and accompanied by a sealed envelope containing competitor's name and address, to be delivered on or before 9th January, 1912, to William D. Cousins, County Technical Office, Courthouse, Coleraine.

JANUARY 20TH, 1912. STATUE AT HAVANA.—Competition instituted by the Cuban Government for the erection at Havana of an equestrian statue of the Cuban General Maceo. Plaster models should be sent by sculptors desirous of competing to the "Comisión Ejecutiva, Monumento al General Antonio Maceo, Secretaria (de Instrucción) Pública y Bellas Artes," Havana, before January 20th. The sum of 100,000 pesos (about £20,600) has been voted for the work. British sculptors proposing to compete should first put themselves into communication with the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., where also further particulars (in Spanish) may be seen.

JANUARY 29TH, 1912. GOVERNMENT PALACE, MONTEVIDEO.—Designs are invited for a Government Palace and a town



NEW COUNCIL OFFICES, NEWBURN-ON-TYNE: ENTRANCE HALL AND
STAIRCASE. EDWARD CRATNEY, ARCHITECT.

improvement scheme. Premiums: For the former, £2,125 and £850; for the latter, £1,060, £640, and £425. Conditions, etc., at the Board of Trade, 73, Basinghall Street, E.C.

JANUARY 31ST, 1912. FEDERAL CAPITAL CITY, AUSTRALIA.—Competitive designs are invited by the Commonwealth of Australia for the laying-out of the Federal Capital City. Premiums are offered as follows: 1st, £1,750; 2nd, £750; 3rd, £500. Conditions, together with particulars, plans, and instructions, may be obtained at the office of the High Commissioner for Australia, London. Designs must be delivered by January 31st, 1912, to King O'Malley, Minister of State for Home Affairs, Commonwealth of Australia.

[The Institute of Architects of New South Wales and the R.I.B.A. have asked members and Licentiates not to take part in this competition unless the conditions are made more satisfactory. See our issue for November 8th, p. 485, and article printed in the issue of November 22nd, p. 537.]

FEBRUARY 17TH, 1912. NEW OFFICES FOR THE PORT OF LONDON.—The Port of London Authority invite preliminary sketch designs for new head offices in Trinity Square, and for lay-out of a building site. Sir Aston Webb, R.A., is the assessor.

MARCH 16TH. PUBLIC OFFICES, HARROW.—Harrow-on-the-Hill Urban District Council invite designs for enlargement and alterations of their public offices, at a cost not to exceed £4,500. Premiums, thirty, twenty, and fifteen guineas. Plan and instructions (£1, returnable) from Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, Council Offices, Harrow-on-the-Hill. R.I.B.A. will be asked to appoint an assessor.

OBITUARY.

Mr. Gilbert Wood.

We regret to announce the death of Mr. Gilbert Wood, which occurred on December 22nd. Mr. Wood, who was born on April 20th, 1833, was the proprietor of "The Architect," from the active management of which journal he was compelled to retire ten years ago in consequence of a severe heart attack. From his earliest youth the late Mr. Wood was intimately connected with printing, publishing, and journalism, and he was associated during his life with a number of successful newspaper enterprises. In politics he was an ardent Conservative, his services to that party having been so distinguished that the late Lord Beaconsfield offered him a knighthood and a safe seat in Parliament, both of which, however, were declined. He was an elder of the English Presbyterian Church, and performed much useful work for the Sunday School Union.

Dr. Walter Copland Perry.

Dr. Perry, who died on Thursday last at the advanced age of ninety-seven, had made substantial contributions towards the study of classical archaeology, and had written a great deal on Greek and Roman art. He supplied the South Kensington Museum with a large collection of casts from antique statues, which, to his annoyance, were afterwards removed to Bloomsbury.

Mr. Joseph Bell.

Mr. Joseph Bell, who died at Saffron Walden last Saturday, was senior partner in the firm of Messrs. William Bell and Sons, builders, contractors, and timber merchants, of Saffron Walden and Cambridge. He was founder and a director

of Messrs. Stanton and Co., Ltd., contractors and timber merchants, King's Lynn, and one of the founders of the Meldreth Cement Company, Cambridge. He was president of the Cambridge and District Master Builders' Association, and J.P. for the County of Essex and the Borough of Saffron Walden.

Sir George Pringle.

Sir George Pringle, who died at 38, Holmbush Road, Putney Hill, on Christmas Day, at the age of 86, was called to the Bar by the Middle Temple in 1853, and was appointed assistant secretary to the Ecclesiastical Commissioners three years later. In 1872 he became secretary and steward of manors to the same board, a position which he held until 1888, when he was succeeded by the late Sir Alfred de Bock Porter. He was knighted in 1882.

Mr. Albert Edward King.

The death occurred last week of Mr. Albert Edward King, for some years an architect and surveyor, in Banter Gate, Loughborough. Mr. King, who was about 41 years of age, was a native of Yorkshire. He was articled with Mr. T. Thorpe, of Goole, and after gaining experience in other towns was for a time at Long Eaton, whence he went to Loughborough in 1897. He lived of late at his London offices, Victoria Street, Westminster, and had secured an extensive practice, principally in factory work, and in recent years with electric theatres. Mr. King had been in indifferent health for a few weeks past, and had an attack of ptomaine poisoning with pneumonia. He became seriously ill about December 15th, and in spite of the best medical skill and attention passed away on December 26th.

AUTOMATIC FIRE EXTINCTION.

Another example of the efficiency and utility of the Grinnell Sprinkler and Fire Alarm has been afforded by the fire which occurred on December 6th at Gilcomston Mills, Aberdeen. A fire originated in the exhaust house of Husk Mill. There was an installation of sprinklers throughout the mills, and ten of them were immediately put in operation by the outbreak. The alarm gong was also automatically set ringing. The protection given by the sprinkler installation was such that very trifling damage was caused by the outbreak, and the owners of the mill, Messrs. John Strachan and Sons, have written to Messrs. Mather and Platt stating that their "high opinion of the Grinnell system has been further strengthened by this practical demonstration of its reliability and efficiency." The record of the Grinnell Sprinkler at the present time is over 13,000 fires extinguished, with an average damage (including both fire and water) of only about £60 per fire. There are installations in almost every class of building where the risk of fire is more or less pronounced—textile, wood-working, boot and shoe factories, corn mills, oil mills, theatres, retail shops and stores, etc. The system is well adapted for the protection of every class of manufacturing and warehouse property.

The Infectious Hospital, Newark, is being supplied with Shorland's warm-air ventilating patent Manchester grates, patent exhaust roof ventilators and inlet ventilators, by Messrs. E. H. Shorland and Brother, Ltd., of Failsforth, Manchester.



NEW COUNCIL OFFICES, NEWBURN-ON-TYNE: FIRST-FLOOR LANDING, LEADING TO COUNCIL CHAMBER. EDWARD CRATNEY, ARCHITECT.

R.I.B.A. AUTUMN EXAMINATIONS.

Preliminary.

The Preliminary Examination, qualifying for registration as *Probationer R.I.B.A.*, was held in London and the provincial centres mentioned below on November 20th and 21st last. The Board of Architectural Education, reporting the results to the Council, state that of the 95 candidates admitted, 37 were exempted from sitting, and the remaining 58 were examined, with the following results:—

Centre.	Total Examined.	Passed.	Rele- gated.
London ..	40	27	13
Bristol ..	7	6	1
Leeds ..	3	2	1
Manchester ..	6	5	1
Newcastle ..	2	2	0
	58	42	16

The passed candidates, with those exempted, making a total altogether of 79, have been registered as Probationers, and are as follows:—

ALLUM, S. C., Paddington, W.
ANDREW, H., Hull.
ATKIN-BERRY, H. G., London, E.C.
BARLEY, F., Westcliff-on-Sea.
BARLOW, S., Stockport.
BISIKER, A. M., Crouch End, N.
BLACKPOOL, J., Kidderminster.
BOWMAN, A. W., London, S.W.
BRADSHAW, G., Failssworth, Manchester.
BRADSHAW, H. C., Wavertree, Liverpool.
BRINKWORTH, E. A., Corsham, Wilts.
BROOKS, C. J., London, S.W.
BRUETON, B. F., Bridgwater.
BURGORD, J., Holt, Norfolk.
CALDWELL, W., Penzance.
CAMERON, A. G., Inverness.
CARRERAS, L. E., St. John's Wood, N.W.
COOPER, C. M., Regent's Park, N.W.
COOPER, J. G., Willesden Green.
CROSSLEY, G., Bradford.
CROWTHER, J. H., Elland.
CURTIS, H. L., Tufnell Park, N.
DANGERFIELD, St. Albans.
DREW, S. T., Grove Park, Kent.
EVANS, F. H., Moseley, Birmingham.
FEIRN, J. L., Windermere.
FORBES, W. A. S., Newlyn.
FOSTER, K. G., Buckfastleigh.
FRAME, R., Larkhall.
GOSSLING, H. F., South Croydon.
GRAY, A., Hertford.
GUTTERIDGE, R. H., Russell Square, W.C.
HARRIS, W. H., Stoke Newington, N.
HARRISON, H. St. J., Jesmond.
HITCH, J. O. B., Vauxhall, S.W.
HUNT, R., Oxford.
HUSTLER, Colonel B., Castleford.
JACKSON, R. D., Oxtou.
JACOB, J. H., Salisbury.
JEFFREYS, H. M., Maldon, Essex.
JEYNES, H. J., Birmingham.
JOHNSON, C. MacA., C. Gloucester.
JOHNSON, H. A., Heaton Moore.
KEY, W. D., Upminster.
LANGDELL, G. A., London, S.W.
MACBEAN, I. B., Ealing Common, W.
MACPHERSON, H., Langside, Glasgow.
MARNER, G. L. S., London, E.C.
MARTYN, E. A. L., Redruth.
MERCER, J. F. L., Blackburn.
MILNES, F., Huddersfield.
MOERDIJK, G., Battersea Park, S.W.
MOSLEY, A. R., Eastbourne.
OMAR, J., Hampstead, N.W.
PALMER, A. J., London, N.W.
PAUL, H., Junr., Ealing, W.
PITE, R. W., Ealing, W.
POWELL, F. H., Bournemouth.
PYE, J. F., Grimsby.
REMEDIOS, R. M., dos, Maida Vale, W.

RIX, A. D., Norwich.
ROBINSON, J. J., Kentish Town, N.W.
ROGERS, J. R., Leamington Spa.
ROUTLEY, L. J., Taunton.
RUDMAN, W., Chippenham.
SHACKLETON, F. H., Luton.
SHIBLEY, A. R., Merton Park, Surrey.
SMITH, C. H. N., Norfolk.
SPURWAY, G. V., Milverton.
STANLEY, L. S., Cambridge.
TANNER, E. A. D., Fulham, S.W.
THOMAS, D. R., Llangadock.
THOMAS, H. M., Maidstone.
THOMSON, J. S., Wimbledon, S.W.
TUNNARD, H. B., Denmark Hill, S.E.
WAGER, F., Aston Cross, Birmingham.
WALKER, S. E., Halifax.
WILLIAMS, L. E., Stockwell, S.W.
WILLIAMS, P. J., Carmarthen.

Intermediate.

The Intermediate Examination, qualifying for registration as *Student R.I.B.A.*, was held in London and the undermentioned provincial centres on November 20th, 21st, 23rd, and 24th. The Board of Architectural Education report to the Council that 100 candidates were admitted and examined, with the following results:—

Centre.	Total Examined.	Passed.	Rele- gated.
London ..	59	36	23
Bristol ..	8	5	3
Leeds ..	5	2	3
Manchester ..	23	14	9
Newcastle ..	5	3	2
	100	60	40

The successful candidates, who have been registered as Students, are as follows, their names being given in order of merit as placed by the Examiners:—

BENNETT, T. P., Kilburn, N.W.
THOMAS, W. N., Crewe.
NEWTON, W. G., London, W.
LORNE, F., London, W.C.
HOFER, M. R., Eastcote, Middlesex.
ROBERTSON, M. D., London, W.C.
MACKENZIE, K. B., London, W.C.
DUBINS, L. G. A., London, S.W.
WOODROFFE, N. F., Purley Downs, Surrey.
ROWNTREE, C., Hammersmith, W.
LAIT, L. H., Ravenscourt Park, W.
EBBS, E. H. M., Harlesden, N.W.
HINTON, J. G., Winchester.
WALTER, R. A., Harringay, N.
ELGAR, W. H., Folkestone.
FRISCOTT, H. S., Plymouth.
MOERDIJK, G., Battersea Park, S.W.
TAYLOR, R. V., Southport.
WILLIAMSON, F., Levenshulme.
GOLD, H. A., Beckenham, Kent.
HARLAND, N. G., Stamford Hill, N.
HILL, C. E., Sheffield.
CHEADLE, J. O., Kensington, W.
HART, E. J., Salford.
PIDSLEY, W. G., Pinhoe, Devon.
RUDHALL, P. W. G., London, N.W.
HEMM, G., Heaton Chapel, near Stockport.
ROBERTSON, G. A. K., Belfast.
CLARK, C. J. K., Newcastle-on-Tyne.
BOTHWELL, E. F., Forest Gate, Essex.
BROADHEAD, F. A., Nottingham.
CLARK, S., Carlisle.
EDWARDS, A. T., Liverpool.
GARRETT, S. C., Brighton.
GRICE, W. S., Ealing, W.
HARWOOD, A. W., Pall Mall East, S.W.
JACKSON, B. de C., Beckenham.
LEWIS, W. J., Pontypridd.
MADDOCK, R. H., Sutton, Surrey.
MATTHEWS, R. E., Coventry.
MCLEAN, G., Portmadoc.
MOUNTFORD, E. W., Guildford.
NICHOLS, C. E., Eckington, Sheffield.

NORRIS, E. B., Didsbury.
PALMER, J., Islington, N.
PARKIN, W. G., Hampstead, N.W.
RILEY, R. H., Lower Darwen.
SILCOCK, A., Bath.
SMITH, T. H., Bolton.
SUNTER, M. C., C-on-M. Manchester.
TOONE, A. A. G., Chorlton-cum-Hardy, Manchester.
WEST, A. J., Nottingham.
WHITE, P. G., Bickley, Kent.
WIGGINS, J. S., Brighton.
WILLIAMS, J. G., St. John's Wood, N.W.
WILLIAMS, W. J. V., Llansamlet, Swansea.
WILSDON, P. T., West Kensington, S.W.
WINDER, A. M., Oldham.
WOODHOUSE, B. W., Carlisle.
YETTS, L. M., B.A., Finsbury Pavement, E.C.

The following table shows the number of failures in each subject of the Intermediate Examination:—

I. Classic Architecture ..	18
II. Mediæval Architecture ..	27
III. Renaissance Architecture ..	34
IV. General Questions ..	20
V. Theoretical Construction ..	18
VI. Descriptive Geometry ..	20
VII. Applied Construction ..	17

Intermediate Exemptions.

The following candidates, having produced, in accordance with the regulations, satisfactory evidence of previous training, were exempted from sitting for the Intermediate Examination, and have been registered as Students R.I.B.A.—namely:—

BARRY, F. R., jun., Kew Road, Richmond, Surrey [Architectural Association School].
CARRERAS, L. E., St. John's Wood, N.W. [Division of Architecture, King's College].
HUGHES, V. H., Sandgate, Kent [School of Architecture, Liverpool University].
OMAR, I., Hampstead, N.W. [School of Architecture, University College].
WEBB, P. E., Ladbroke Square, W. [Architectural Assoc. School].
WILLIAMS, L. E., Stockwell, S.W. [Division of Architecture, King's College].

Final and Special.

The Final and Special Examinations qualifying for candidature as Associate R.I.B.A. were held in London from November 30th to December 8th. The Board of Architectural Education report to the Council that of the 99 candidates admitted and examined, 56 passed and the remaining 43 were relegated to their studies. The passed candidates, who, subject to Clause 8 of the Charter, have become qualified for candidature, are as follows, the * prefixed to a name indicating that the candidate sat for the Special Examination, which is designed for architects in practice and chief assistants exempted by the Council from the Preliminary and Intermediate Examinations and from submitting Testimonies of Study:—

ARCHER, H. H., Windsor.
BAREFOOT, H. J. L., Wandsworth Common, S.W.
BARGMAN, R. F., Dorking.
*BAXTER, J. A. M., Edinburgh.
BENNETT, T., Gravesend.
BESANT, H. S., Lee, Kent.
BRITTAN, H. W., Croydon.
*CASTLOW, C., Roundhay, Leeds.
CLARKE, J. M., Fulwood, Preston.
COWDELL, C. J. M., Leicester.
CROUCH, F. A., Hove, Brighton.
*CULLEN, D. S., South Norwood.

DOVASTON, J., Ealing, W.
DOWDESWELL, F., Palmer's Green, N.
DUNN, G. M., Cheapside, E.C.
DURRANT, A. M., Hemel Hempstead.
EDWARDS, S. J., Bayswater, W.
GROUND, J. K., Bloomsbury, W.C.
HEALING, J. B., Leicester.
HEPWORTH, P. D., Hampstead Heath,
N.W.

JOHNSTON, B., South Ealing, W.
*KNEWSTUBB, J. J., Penrith.
*LARSEN, A. W., Grove Park, W.
LAY, C. H., Hampstead, N.W.
LENTON, F. J., Stamford.
LING, R. B., Clapham Common, S.W.
*LOVELL, R. G., Eastbourne.
MARTIN, H. R., Lee, S.E.
MEIKLEHAM, D. L., Golder's Green, N.W.
MORLEY, F. H., Liverpool.
MOSS, H. E., Kingston-on-Thames.
NICHOLSON, F. W., Anfield, Liverpool.
*NICOL, R. D., Calcutta, India.
ORDISH, R., Derby.
OWEN, G., London, W.C.
*OXLEY, W. B., Leicester.
PAGE, J., Barnet.

PHILLIPS, A. T., Harpenden.
ROBINSON, H. G. F., Hampstead, N.W.
RUSSELL, A. L. N., London, W.
SELWAY, E. R. D., Clapham, S.W.
SHEARS, R., Westcliff-on-Sea.
SINCLAIR, W. B., Bexley, Kent.
SOUSTER, C. L., Lee, S.E.
STEDMAN, W. B., Harlington, Middlesex.
*STEWART, H. S., Bloomsbury Square,
W.C.
STOCKTON, R., Stockport.
*SWASH, F. S., Llandrindod Wells.
VOYSEY, C., Junr., Baker Street, W.
*WELFORD, A., Bloomsbury Square, W.C.
WHITE, C. H., Bishopston, Bristol.
WHITEHEAD, T. G., Croydon, S.W.
WHYMPER, W., Gray's Inn Square, W.C.
WILLCOCKS, C. B., Caversham Heights,
Oxon.
WORTHINGTON, J. H., Alderley Edge.
*WYLD, R. S. B., Bedford Row, W.C.

The following table shows the number of failures in each subject of the Final and Special Examination:—

I. Design	..	....	..	31
II. The Principles of Architecture	..	....	..	24
III. Building Materials	..	....	..	11
IV. Principles of Hygiene	..	....	..	25
V. Specifications	..	....	..	18
VI. Construction—Foundations,	..	....	..	31
etc.	..	....	..	31
VII. Construction—Iron and	..	....	..	30
Steel, etc.	..	....	..	30

Ashpitel Prize, 1911.

The Board of Architectural Education recommend the Council to award the Ashpitel Prize for 1911 to Mr. Philip Dalton Hepworth [P. 1907, S. 1910] of "Cahirdown," Holford Road, Hampstead Heath, who passed the Final Examination above referred to, he being the candidate who has most highly distinguished himself in the Examinations held during the past year.

NEW ASSOCIATION OF CONSULTING ENGINEERS.

On January 15 next, at 4 p.m., in the lecture theatre of the Institution of Electrical Engineers, the inaugural meeting will be held of the Association of Consulting Engineers, the formation of which was decided upon at a meeting of engineers held last autumn under the presidency of Sir William Preece. On that occasion a committee was appointed to draw up rules, and a copy of these has

been sent to us by Mr. A. H. Dykes, the honorary secretary.

It is provided that there shall be one class of member only, who must fulfil the following conditions: (a) He shall be in practice as a consulting engineer, either individually or as a partner of a firm of consulting engineers; (b) shall be of such standing as, in the opinion of the committee of the association, entitles him to admission to the association; (c) shall be a full member of the institution representing the particular branch of the profession in which he practises; (d) shall not be a member of, or a partner in, or an agent for, any contracting or manufacturing firm or company or business with which he may have occasion to deal on behalf of his clients; (e) shall not be a director or employee of, or be an agent for, any company doing engineering insurance work; and (f) shall not be connected with any company or business who advertise or canvass for consulting work.

The rules which relate to the conduct of members are as follows: (1) A member shall act in all professional matters strictly in a fiduciary capacity with regard to any clients whom he may advise, and his charges to such clients shall constitute his only remuneration in connection with such work. (2) He shall not accept any trade commissions, discounts, allowances, or any indirect profit in connection with any professional work on which he is engaged. (3) He shall not, without disclosing the fact in writing to his clients, be a director of, or shareholder in, or have a financial interest in, any contracting or manufacturing firm or company or business with which he may have occasion to deal on behalf of his clients. (4) He shall not receive directly or indirectly any royalty, gratuity, or commission on any patented or protected article or process and on work which he is carrying out for his clients unless and until such royalty, gratuity, or commission has been authorised in writing by those clients. (5) He shall not act for a new client to the prejudice of an existing client. (6) He shall place orders explicitly on behalf of his client and not on his own behalf. (7) Except at the request of the client he shall not be the medium of payments to any contractor or business firm, but shall only issue certificates for payment by his client. (8) He shall not knowingly accept professional work in connection with which another member has been appointed, unless either formally notified by the client of the termination of the previous appointment or else in collaboration with the other member. (9) He shall not advertise directly or indirectly for professional employment, nor shall he answer any advertisement for a consulting engineer. (10) He shall not solicit professional work either directly or indirectly or by an agent, nor shall he pay by commission or otherwise any person who may introduce clients to him. (11) He shall not conduct himself in a manner, nor act in any capacity, nor hold any appointment, which, in the opinion of the committee of the association, prejudices his position as a consulting engineer.

The remainder of the rules are concerned with the election and expulsion of members and with the committee and its functions.

It will be seen from the foregoing that the conditions of membership are, very properly, of a stringent character, and likely to gain for the association a high status. We wish the association success.

CORRESPONDENCE.

Architects of the Office of Works.

To the Editor of the "ARCHITECTS' AND BUILDERS' JOURNAL."

SIR,—Mr. Dudley Ward, as representing the First Commissioner, in his answer on December 15 to Mr. Noel Buxton in the House of Commons, when asked to "state the classes and the total number of architects employed in his department," and "what number of them are associates or licentiates of the Royal Institute of British Architects," makes no mention of the class, numbering forty, termed "architectural assistants," of whom nineteen are associates or licentiates.

This omission is all the more curious seeing that Mr. Dudley Ward had his attention drawn to this class very distinctly by Mr. Philip Snowden in the House of Commons as recently as November 24th, and he then stated he would consider establishments for "a number of professional men engaged in the Office of Works termed architectural assistants, who possess their Board's certificate of technical efficiency, some of them being members of the Royal Institute of British Architects, Surveyors' Institute, and allied societies." And more recent still (on December 7th), he replied to Mr. Philip Snowden in the House that "the desires of each member of the architectural assistants' class should have the opportunity of being placed upon the established list."

This list being incomplete, may we not therefore assume the cost of the staff in salaries therein stated to be 3.34 per cent. to be equally incomplete, to the extent of another 3 per cent. [bringing it into accordance with the figure mentioned by the President of the R.I.B.A.]?

"THE WHOLE TRUTH."

Wren and Hampton Court.

To the Editor of the "ARCHITECTS' AND BUILDERS' JOURNAL."

SIR,—Commenting on my paper, you wrote in your issue of the 20th ult.: "Has the former blind worship of Wren brought about at length the inevitable reaction? When, in its turn, dispraise of him has run its course, we may get the reasoned view of him." This is a further consideration to my subject, and it touches a well-established human characteristic. But my point with regard to Wren at Hampton Court was: "What the devil was he doing in that galaxy?"

The east and south fronts of Hampton Court in Tudor times were the Queen's and King's lodgings respectively, as they continued to be after Wren's rebuilding. The drawings of Wynegaerde show that these were the principal and not the least picturesque parts of the building. For the sake of rebuilding in the new fashion Wren was instructed to destroy the best of that which was old; and, as we know, the intention was to have replaced much more of the building. What remains of the Tudor work one values, and what Wren built one also admires; but it would have been better to have left the old and built a new palace elsewhere. In short, it is folly to pull down one good thing to replace it with another; and this is as true of buildings as you have pointed out it is of the reputations of their builders.

CLOUDESLEY S. WILLIS.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

The Concrete Institute.

The third volume of "Transactions and Notes" of the Concrete Institute, consisting of

328 pages, and containing many illustrations and several folding plates, affords substantial proof of the value and success of the Institute, which having been in existence for more than two years, may now be assumed to have become firmly established. It was of course quite impossible that the Institute should have sprung from the head of Minerva fully armed and finally equipped for all contingencies, and therefore it is not surprising to find in this volume a record of progressive change. The most important modification is that which may be said to affect the constitution of the Institute. At first there were a Council and an Executive. The general nature of their respective functions is sufficiently indicated in their titles; and, theoretically, it no doubt seemed, at the outset, to be right and proper to have a deliberative body, and an administrative committee to which its powers could be delegated. Where possible, however, the simplification of any sort of machinery is always desirable; and there can be little doubt of the wisdom of deciding to consolidate the management of the Institute's affairs by passing new rules to the effect that the council shall not only have the responsibility, but also the actual management, to its credit—an arrangement that, with other institutions, has been found sufficiently satisfactory, as minimising the obvious risks of delay, misunderstanding, and possible friction.

Educational Facilities.

At the same time that this new rule was passed another was introduced, and also passed, having

for its object the admission of students. Some surprise has been expressed that this provision was not made at the very beginning, but probably the Institute followed quite the normal course in getting itself thoroughly established, and in ascertaining in practice whether it could reasonably undertake the responsibility of entertaining students. It can, at all events, now show that it has something definite to teach, and that it is in a position to lead students into the right paths, if for the moment there is lacking the full educational equipment and organisation which later may possibly come into being. In the meantime, it may be justly said that the Institute itself is a very effective educational instrument. The Institute, however, has still very much to do by way of gathering information before it can very confidently adventure on the complementary and perhaps more responsible process of imparting it. Nevertheless, in its conferences, its lectures, its visits, and above all in the publications in which its transactions are recorded, the Institute affords very special facilities for students, among whom may be counted many others besides those who are in "the first flush of youth." With regard to the lectures, it has been complained that they are not so well attended as they should be—probably because they are necessarily somewhat narrow in scope, and of restricted interest.

Educationally, this is rather an advantage; repetition, indeed, being one of the essential conditions of the acquirement of knowledge. Repetition, however, hardly tends to popularity or attractiveness, and the lectures and discussions having apparently gone the full round of the subject—which is a very different thing from exhausting it in detail—the attendance is neither so numerous nor so representative as it should be. Not, perhaps, are the lecturers and their subjects so various as they might be, and probably will be, seeing that, in the future, engineering interests are to be included.

A Common Meeting Ground.

Some means of stimulating the interest of architects should be devised. We have repeatedly urged upon architects the desirability of availing themselves to the full of such facilities for acquiring information with regard to reinforced concrete construction as the Institute affords; but apparently the only occasions on which architects are noticeably present at the meetings are those when an architect is announced to deliver a lecture, as, for instance, when Professor Beresford Pite, F.R.I.B.A., read his paper on "The Artistic Treatment of Concrete," which is duly printed in the volume of the Institute's Transactions under notice. It will be remembered that several architects took part in the discussion of Professor Pite's paper—namely, Mr. H. Heathcote Statham, F.R.I.B.A., Mr. A. Alban H. Scott, M.S.A., Mr. A. E. Corbett, F.R.I.B.A., Mr. Percival Fraser, A.R.I.B.A., and, of course, the chairman, Sir Henry Tanner, F.R.I.B.A. A few architects of distinction are members of the Institute, but we should like to see the architectural element greatly and immediately strengthened, lest peradventure it may in course of time become swamped by engineering interests. The Institute seems to offer an excellent, and almost a unique, opportunity for architects, engineers, and concrete and cement experts, to meet on common ground, to mutual advantage.

The Architect and the Engineer.

The discussion of Professor Pite's paper afforded one slight but significant example of the benefits of face-to-face conference between various denominations of builders. The incident served at once to show how easily a misunderstanding may arise, and how easily it may be explained away when opportunity allows. An architect had said, in the course of the discussion: "I think the greatest trouble we shall have in the future in connection with the æsthetic treatment of concrete buildings will be with the so-called specialists and engineers. The engineers are designing too many buildings, and that is, I think, where we shall have the greatest trouble. Concrete building work is gradually leaving the architect's hands and getting into the purely constructional men's hands." This observation was on some hands regarded as a slight on engineers—a sense which was far from the intention of the author, as he promptly explained when one or two speakers who followed him mentioned how it had struck

them. One gentleman understood the reference to imply "that concrete will be in a bad way if it is left in the hands of the engineers," and he forthwith launched into a glorification of the Forth Bridge and the Assouan Dam. Another said: "I am afraid, Sir, I am an engineer, and I am not supposed to know much about beauty. At least, I rather gather that is the idea." An architect at once corrected this impression by remarking that the observations on engineers had been, he thought, rather misunderstood: "Nobody can say for a moment that purely engineering works are usually ill-designed—as, for instance, such works as the Forth Bridge and the Assouan Dam, which are, I think, most beautiful—but with regard to the facade of a building, I think it is somewhat outside an engineer's scope, and it is, I think, with regard to such architectural treatment that the remarks applied." That this was so was confirmed by the author of the misunderstood passage: "My reference to engineers was purely from an architectural point of view, applying to the facings of buildings and not to the magnificent engineering works which they have done." It is to be hoped that the explanation was satisfactory to the engineers. Whether or not it cleared up this particular misunderstanding quite conclusively is a matter of less importance than the illustration the incident affords of the advantages of conference: which is a point that should need no reinforcement.

The Case for Fraternity.

It was reinforced, however, and very ably, by Professor Pite in replying to the discussion on his paper: "I dispute," he said, "the right of engineers to deal æsthetically with any subject without training. They have no more right to talk about how they design masses having vertical and horizontal forms than I have any right, as an architect, to discuss with them how I am to design an enormous concrete work. If I know, I should expect them to listen to me; if they know, I should listen to them with pleasure. Why, Sir, did not the Council of this Institute invite a distinguished engineer to read a paper on 'The Æsthetic Treatment of Concrete buildings'?" The advantages of conference could hardly have been more forcibly put. Clearly, if the architect, the engineer, and the expert will only listen to each other, they will hear some useful home truths that may ultimately fructify into applications of immense practical value; and if the various denominations of builders will only fraternise more freely, there must ensue an enormous gain in understanding, confidence, and esteem.

Texture and Facing.

The subject of texture being among the topics of the moment, it may be interesting to draw attention to some observations on this subject that were made by Sir Henry Tanner in the course of the discussion on Professor Pite's paper. Sir Henry said: "It seems to me that reinforced concrete has to be considered from different standpoints. If you have it in a building in a town, it has to be treated in a different

at the centre being $\frac{2r}{3}$

The following additional values will be useful in calculations:—

a	$\frac{y_A}{r}$	$\frac{y_c}{r}$
0
0.1
0.2
0.3
0.4
0.5

For values above $a=.5$, work from the other end for $(1-a)$ and reverse y_A and y_c .

If, therefore an isolated load P be placed at the point G on the arch, project G vertically upwards to meet the intersection locus XX at J and from J draw tangents JK, JL to the reaction envelope MNO to meet the vertical through A and C at K and L .

To get the horizontal thrust H and vertical reactions V_A, V_c set down $ab = P$, Fig. 9, and draw ac parallel to JK and bc parallel to JL ; then, if cd is drawn perpendicular to ab , $cd = H$, $ad = V_A$ and $db = V_c$.

If we require the bending moment at any point Q of the arch, this is given by $B = H \times Q'S$.

Proof of Formulæ.

Take first equation—40:

From A to N , Fig. 7, $B = V_A x - H(y - y_A)$

From N to C , $B = V_A x - H(y - y_A)$

$$\therefore \int_0^1 B dx = \int_0^1 V_A x dx - \int_0^1 H(y - y_A) dx$$

$$= \int_0^1 P(x - al) dx$$

As before $y = \frac{4r}{12}(lx - x^2)$

$$\text{Now } \int_0^1 V_A x dx = \frac{V_A l^2}{2}$$

$$\int_0^1 H(y - y_A) dx = -Hy_A l + \frac{4rH}{12} \left(\frac{l^3}{2} - \frac{l^3}{3} \right)$$

$$\int_{a1}^1 P(x - al) dx = \left[P \left(\frac{x^2}{2} - alx \right) \right]_{a1}^1$$

$$= P \left(\frac{l^2}{2} - al^2 - \frac{a^2 l^2}{2} + a^2 l^2 \right)$$

$$= \frac{Pl^2}{2} (1 - 2a + a^2) = \frac{Pl^2}{2} (1 - a)^2$$

$$\therefore \int_0^1 B dx = \frac{V_A l^2}{2} - Hl \left(\frac{4r}{6} - y_A \right) - \frac{Pl^2}{2} (1 - a)^2$$

\therefore Dividing through by $\frac{1}{2}$ equation (40) becomes

$$V_A l - 2H \left(\frac{2r}{3} - y_A \right) - Pl(1 - a)^2 = 0 \quad (46)$$

These integrations and proof are given in full, because the writer does not know of a book where they are set out without the omission of most of the steps, so that many students are unable to follow the steps at all. The inclusion of the steps gives, however, an appearance of length which can hardly be avoided under the circumstances.

Next take equation (39): The values of B are as before \therefore we have

$$\int_0^1 B x dx = \int_0^1 V_A x^2 dx - \int_0^1 H(y - y_A) x dx$$

$$= \int_{a1}^1 P(x - al) x dx$$

$$\int_0^1 V_A x^2 dx = \frac{V_A l^3}{3}$$

$$\int_0^1 H(y - y_A) x dx = \frac{4rH}{12} \left(\frac{l^4}{3} - \frac{l^4}{4} \right) - Hy_A \frac{l^2}{2}$$

$$\int_{a1}^1 P(x - al) x dx = \left[P \left(\frac{x^3}{3} - alx^2 \right) \right]_{a1}^1$$

$$= P \left(\frac{l^3}{3} - \frac{al^3}{2} - \frac{a^3 l^3}{3} + \frac{a^4 l^3}{2} \right)$$

$$= \frac{Pl^3}{6} (2 - 3a + a^3) = \frac{Pl^3}{6} (1 - a)^2 (2 + a)$$

$$\therefore \int_0^1 B x dx = \frac{V_A l^3}{3} - H \left(\frac{rl^2}{3} - \frac{y_A l^2}{2} \right) - \frac{Pl^3}{6} (1 - a)^2 (2 + a)$$

\therefore Equation (39) becomes, dividing through by $\frac{l^2}{3}$

$$V_A l - H \left(r - \frac{3y_A}{2} \right) - \frac{Pl}{2} (1 - a)^2 (2 + a) = 0 \quad (47)$$

Finally take equation (38), using the same values of B :

$$\int_0^1 B y dx = \int_0^1 V_A x y dx - \int_0^1 H(y - y_A) y dx$$

$$= \int_{a1}^1 P(x - al) y dx$$

$$\int_0^1 V_A x y dx = \int_0^1 V_A \frac{4r}{12} (lx - x^2) x dx$$

$$= \frac{V_A 4r}{12} \left(\frac{l^4}{3} - \frac{l^4}{4} \right) = \frac{4V_A r l^2}{12} = \frac{V_A r l^3}{3}$$

$$\int_0^1 H(y - y_A) y dx = \int_0^1 H y^2 dx - \int_0^1 H y_A y dx$$

$$\text{1st term} = H \int_0^1 \frac{16r^2}{14} (l^2 x^2 - 2lx^3 + x^4) dx$$

$$= \frac{16r^2 H}{14} \left(\frac{l^5}{2} - \frac{2l^5}{4} + \frac{l^5}{5} \right) = \frac{8r^2 H l}{15}$$

$$\text{2nd term} = \int_0^1 H y_A \frac{4r}{12} (lx - x^2) dx$$

$$= \frac{H y_A 4r}{12} \left(\frac{l^3}{2} - \frac{l^3}{3} \right) = \frac{2r H y_A l}{3}$$

$$\int_{a1}^1 P(x - al) y dx = \int_{a1}^1 P x y dx - \int_{a1}^1 P a l y dx$$

$$= P \int_{a1}^1 \frac{4r}{12} (lx - x^2) x dx$$

$$= P a l \int_{a1}^1 \frac{4r}{12} (lx - x^2) dx$$

$$= \frac{4Pr}{12} \left[\frac{l^3}{3} - \frac{x^4}{4} \right]_{a1}^1 - \frac{P a 4r l}{12} \left[\frac{l^2}{2} - \frac{x^3}{3} \right]_{a1}^1$$

$$= \frac{4Pr}{12} \left\{ \frac{l^4}{3} - \frac{l^4}{4} - \frac{a^4 l^4}{3} + \frac{a^4 l^4}{4} \right\}$$

$$- \frac{4Pr a l}{12} \left\{ \frac{l^3}{2} - \frac{l^3}{3} - \frac{a^3 l^3}{2} + \frac{a^3 l^3}{3} \right\}$$

$$= 4Pr l^2 \left\{ \frac{1}{12} - \frac{a^3}{3} + \frac{a^4}{4} - \frac{a^3}{6} + \frac{a^3}{3} - \frac{a^4}{3} \right\}$$

$$= \frac{4Pr l^2}{12} \{ 1 - 2a + 2a^3 - a^4 \}$$

$$= \frac{Pr l^2}{3} (1 - a)^3 (1 + a)$$

\therefore Collecting together, we get:

$$\int_0^1 B y dx = \frac{V_A r l^2}{3} - \frac{8r^2 H l}{15} + \frac{2r H y_A l}{3}$$

$$- \frac{Pr l^2}{3} (1 - a)^3 (1 + a)$$

Dividing through by $\frac{rl}{3}$, equation (8) becomes:

$$V_A l - H \left(\frac{8r}{5} - 2y_A \right) - Pl(1 - a)^3 (1 + a) = 0 \quad (48)$$

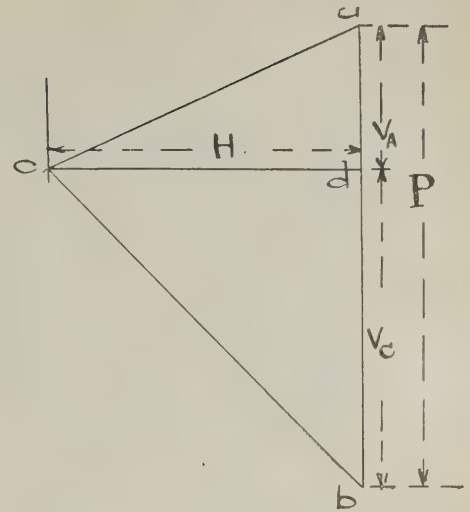


FIG. 9.

Subtract equation (47) from (46) and we get:

$$H \left(\frac{r}{3} - \frac{y_A}{2} \right) = + \frac{a}{2} Pl(1 - a)^2 \quad (49)$$

Subtract equation (48) from (47), thus getting:

$$H \left(\frac{3r}{5} - \frac{y_A}{2} \right) = \frac{a}{2} (1 + 2a) Pl^2 (1 - a)^2 \quad (50)$$

Divide (49) by (50), then:

$$\frac{\frac{r}{3} - \frac{y_A}{2}}{\frac{3r}{5} - \frac{y_A}{2}} = \frac{1}{2a + 1}$$

$$\therefore - \frac{y_A}{2} (2a + 1 - 1) = \frac{3r}{5} - \frac{r}{3} (2a + 1)$$

$$- a y_A = \frac{9r - 10ar - 5r}{15}$$

$$y_A = \frac{(10a - 4)r}{15a} \text{ as in equation (44)}$$

Now put this value in equation (49), then

$$H \left\{ \frac{r}{3} - \frac{(5a - 2)r}{15a} \right\} = \frac{a}{2} Pl(1 - a)^2$$

$$\therefore Hr \left\{ \frac{5a - 5a + 2}{15a} \right\}$$

$$= \frac{2Hr}{15a} = \frac{a}{2} Pl(1 - a)^2$$

$$\therefore H = \frac{15(1 - a)^2 a^2 Pl}{4r} \text{ as in equation (43)}$$

Put these results in equation (46) and we get:

$$V_A l = \frac{15(1 - a)^2 a^2 Pl}{2r} \left(\frac{2r}{3} - \frac{(10a - 4)r}{15a} \right)$$

$$+ Pl(1 - a)^2$$

$$= Pl(1 - a)^2 \left\{ \frac{15a^2}{2r} \left(\frac{4r}{15a} \right) + 1 \right\}$$

$$= Pl(1 - a)^2 (1 + 2a) \quad (41)$$

$$V_A = P(1 - a)^2 (1 + 2a) \quad (42)$$

$\therefore V_c = P - V_A = P(3 - 2a)a^2$

Finally, a substitution in equation (37) gives:

$$y_c = \frac{(6 - 10a)r}{15(1 - a)}$$

Temperature Thrust.

For fixed or hingeless arches the temperature thrust is found in a manner similar to that used for two-hinged arches by making the horizontal movement equal to the expansion of the span.

For the parabolic girder that we have been considering if e is the coefficient of expansion the temperature thrust H_T for an increase t of temperature is given by the equation:

$$H_T = \frac{45EJ_{et}}{4r^2}$$

this acts at a height $\frac{2h}{3}$ from the base line AC .

THE CENTRAL Y.M.C.A. BUILDING.



THE NEW CENTRAL Y.M.C.A. BUILDING, TOTTENHAM COURT ROAD, LONDON. ROWLAND PLUMBE, F.R.I.B.A., ARCHITECT.

THE new central Y.M.C.A. building in Tottenham Court Road, W.C., provides one of the most recent examples of the successful and economical application of reinforced concrete as a constructional medium.

The work, which is of a somewhat monumental character, presents several very interesting features, interesting alike to architects and engineers, and an endeavour will be made to describe some of the most important features in connection with the work.

The building stands on an island site having an area of 3,175 yards super. the main entrance being in Great Russell Street, facing south-east. There are four floors, in addition to the basement and flat roof, which extends over the whole site, the fifth floor only covering a portion of the whole area. The main tower at the corner of Tottenham Court Road and Great Russell Street contains a sixth, seventh, and eighth floor, the latter being at the base of the ferro-concrete dome.

The height of the main roof above ground is about 58 ft., and the base of the dome about 106 ft.

The staircases and landings throughout the building are constructed completely in reinforced concrete.

At the Caroline Street end of the building there is a ferro-concrete retaining wall, extending along the whole length of the frontage about 148 ft., the wall being 12 ft. high from top of slab. A typical section is shown in Fig. 1. The slab under the wall is 5 in. thick only and 5 ft. wide over all; the buttresses, which are the same width as the slab at the bottom, are spaced at about 10 ft. 6 in. centres, the horizontal beam at the top of the wall being 12 in. wide by 5 in. deep. The wall itself is only 5 in. thick, and is reinforced with $\frac{1}{8}$ in. and $\frac{3}{8}$ in. diameter bars suitably spaced, the pressure from the earth being transmitted by the $\frac{3}{8}$ in. diameter bars in the wall slab to the horizontal beams U and V, which in turn transmit it to the buttresses, which act as cantilever beams from the bottom slab. In the arrangement shown in Fig. 1 a portion of the load is transferred by means of the stays X to the main ferro-concrete columns, and is consequently spread over a considerable area of ferro-concrete floor at that level. The buttresses are 7 in. thick, and are reinforced with two bars $d=1\frac{1}{2}$ in., the shear members being the usual Hennebique stirrups made out of $1\frac{1}{4}$ in. by $\frac{5}{8}$ in. steel hoop, and spaced as shown. The horizontal beams U and V have two bars, $d=1$ in. and $d=\frac{3}{4}$ in. respectively, with

$\frac{1}{8}$ in. diameter links as binders spaced at 6 in. centres, the links used being similar to those used in the columns. The stays X are reinforced with one bar $d=\frac{1}{2}$ in. top and bottom, the beams being 2 ft. 3 in. deep at the springing and 12 in. deep at the crown, the shear members at top and bottom being stirrups of $1\frac{1}{4}$ in. by $\frac{5}{8}$ in. hoop steel. The method of transferring and spreading the pressure from retaining walls over as large an area as possible is one which is easily and economically adopted where reinforced concrete is the constructional medium, owing to its exceptional monolithic nature.

The gymnasium, which is 48 ft. wide by 84 ft. long, is immediately underneath the large hall, the floor of which is supported by six large arched beams having an effective span of 50 ft. (see Fig. 2). The beams are generally 6 ft. deep at the springing and 2 ft. 2 in. deep at the crown, including the floor, and are spaced at 10 ft. 6 in. centres; the flooring is 5 in. thick, and the secondary beams are 12 ft. by 6 in. wide, spaced at 8 ft. centres.

The floor is designed to carry a load of 1 cwt. per ft. super (exclusive of weight of floor), and is reinforced in the 10 ft. 6 in. by 8 ft. panels, with carrying bars $d=\frac{5}{8}$ in. at $6\frac{1}{2}$ in. centres, straight and curved alternately, and straight top bars

$\frac{1}{4}$ in. diameter running at right angles to the carrying bar, 6 in. apart. The secondary beams, which transfer the load from the floor slabs, direct to the main arch beams, have generally four tension bars (the area depending on the span of floor carried), with $1\frac{1}{4}$ in. by $\frac{1}{8}$ in. hoop steel stirrups to take up the shear. In all cases the two lower bars are straight and the two upper bars are bent up and carried over the main beam supports at each end to enable the effect of continuity to be taken into account in designing.

The main arched beams, which for the sake of appearance as well as lightness have open webs (see Fig. 3), vary in reinforcement according to the loads carried, the typical beam shown having nine main tension bars $d=1\frac{1}{2}$ in. at the centre of its span, as shown in section, the two outer bars marked A in the lower layer being continued right down into the supporting columns at either side, the centre bar B being bent up at an angle of 45° . Just before reaching the springing of the beam, the bars in the middle layer at the bottom (C and D) are treated in a similar manner, bar C not going quite so far into the columns as A, however, and bar D being bent up parallel to B; but at an earlier stage the top tension bars E and F are all bent up parallel to bars D and B, the two outer bars E being nearest to bars D, and bars F being still further from the springing of the beam.

The bars inserted near the top of the beam to assist the concrete flange to resist the compression stresses are $1\frac{1}{4}$ in. diameter, being nine in number in three layers, as at the bottom of the beam, the bars in the top layers being bent up into the columns at right angles a distance of 2 ft. 6 in. for fixing purposes, the three lower bars running straight into the column and getting a bearing only.

The spacing of the shear members of the beam is clearly shown in Fig. 3. In addition to the stirrups of $1\frac{1}{2}$ in. by $\frac{3}{8}$ in. hoop steel the bars marked L, J, G, H, $d=1\frac{1}{2}$ in., are provided to resist the shearing forces, whilst bars M, N, and O, $d=1\frac{1}{2}$ in., and P and R, $d=1\frac{1}{2}$ in., which frame the panels in the beam, also help to resist the shear stresses, and effectively bind the concrete together. Where the arched beams were supported by columns, extra bars were put in the columns (in this case 2 bars $d=1\frac{1}{2}$ in., $l=15$ ft. 6 in.) to resist the bending moment produced by the beams, and also to achieve fixation. The bars are marked S, and can be plainly seen in Section D.D., and also in the elevation of the column, being securely bound to the compression column bars, top and bottom, by 13 B.W.G. black wire.

The swimming bath, which is in reinforced concrete throughout, is adjacent to the gymnasium in the basement, and is also directly underneath the main hall. The bath proper is 66 ft. long by 21 ft. wide, with a varying depth from 4 ft. 6 in. to 7 ft. at the Caroline Street end. The bottom of the bath, which, of course, is on the slope, is 5 in. thick throughout, and is reinforced with $\frac{3}{8}$ in. diameter bars at 6 in. centres running both ways at top and bottom, the bars being carried up into the walls at the sides for a distance of 2 ft. 6 in. The walls of the bath are 5 in. thick at the bottom and 4 in. thick at the top, and in this particular instance they support one edge of the reinforced concrete platform, which runs round the bath at the top of the walls, and which is supported on the outer edge by brickwork. The reinforcement in the walls is so arranged that no outward

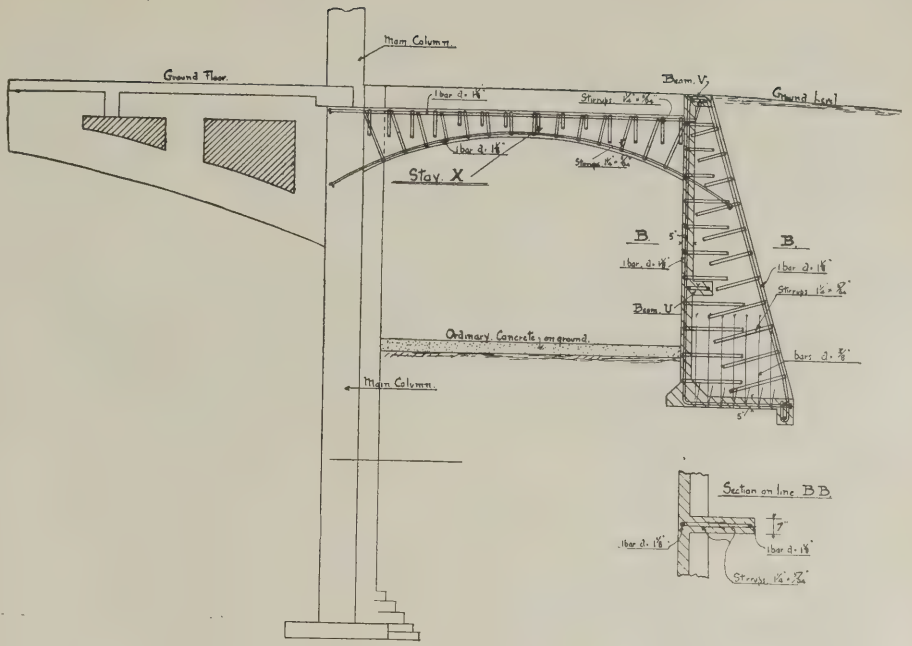


FIG. 1.—TYPICAL SECTION OF RETAINING WALL.

pressure is given to this platform, and therefore no lateral pressure reaches the brickwork. This is effected by treating the walls of the bath as acting in cantilever from the bottom, making the inner face of the concrete in tension, and therefore the reinforcement is placed nearest the inner face. The bars are $\frac{7}{16}$ in. diameter at 6 in. centres, placed vertically near the inner face, and $\frac{5}{16}$ in. diameter bars at 6 in. centres near the outer face, the bars being effectively anchored by being continued well into the bottom slab; $\frac{5}{16}$ in. diameter bars are placed horizontally at 6 in. centres for binding purposes, the shear members being made of $\frac{7}{8}$ in. by 19 B.W.G.. The counterforts, which are at about 6 ft. centres, are reinforced with two bars $d=\frac{5}{8}$ in., their chief duty, since the walls take practically all the pressure from the

water in the bath, being to form an ample bearing for the beams in the flooring round the tank. The bath has recently been tested with its full complement of water, and though the surface of the walls had nothing done to them, the result was remarkable, no actual leakage occurring at any spot. Apart from the slightly richer mixture for the concrete, the waterproofing medium used was good and the workmanship careful. The remainder of the basement does not call for special mention.

The main entrance hall at ground floor level in Great Russell Street, which is about 42 ft. in diameter, is an illustration of reinforced concrete as an architectural asset, shown by the winder staircase leading up to the lounge on the first floor and the circular columns, which are carried up past the first floor level to support the second floor over, their length

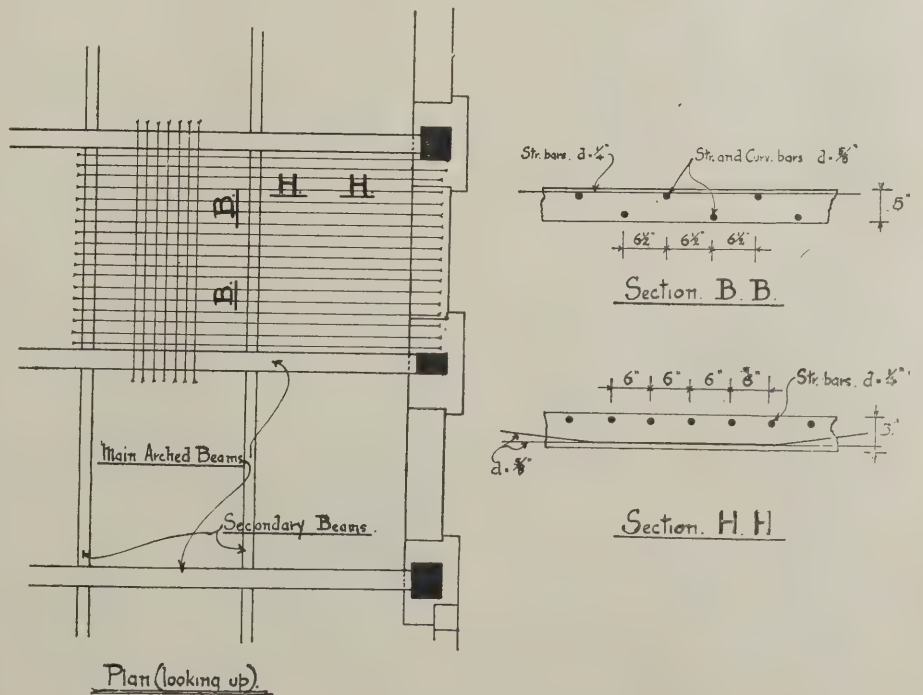


FIG. 2.—MAIN HALL FLOOR.

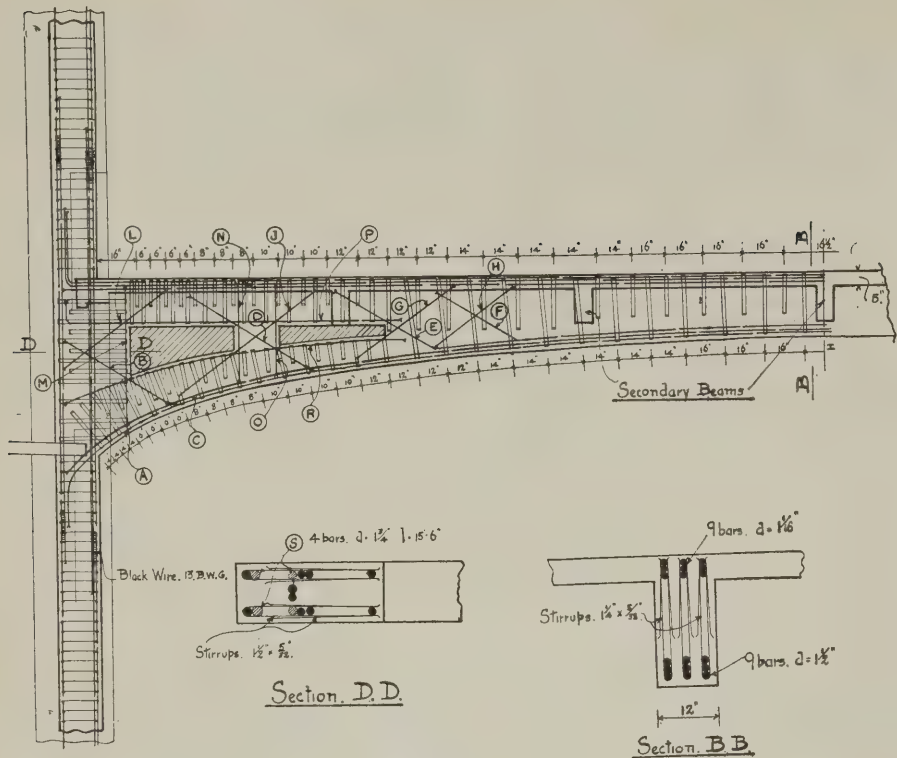


FIG. 3.—TYPICAL DETAIL OF ARCHED BEAMS, GROUND FLOOR.

being about 27 ft. The columns, which also support the staircase where necessary, are eight in number, being 21 in. square for a height of 7 ft. from the hall floor, the next 5 ft. 10 in. being 21 in. diameter, and the remaining length up to the second floor tapering up to 1 ft. 5 1/2 in. diameter at the top. The beams in the second floor over are arranged as cantilevers over these columns, to pick up a circular beam 7 ft. diameter, which, together with the radiating cantilever beams, form the foundation for the decorative plaster work which is now arranged in position. The special centering for the upper portion of these columns was made out of 2 in. by 1 1/2 in. battens, tapered as required and held together vertically at 2 ft. intervals by timber collars, which were calculated to the correct diameter. Although this arrangement necessitated the concrete being filled in from the top of the column, no difficulty was experienced on this account, the columns when struck presenting quite a finished appearance.

The gallery in the main hall is another example of the ease and economy with which reinforced concrete lends itself to cantilever construction. In the section shown (Fig. 4), the arrangement is particularly clear; the overhanging portion is about 6 ft. from the fulcrum beam, which is not excessively reinforced when one considers that it is only 3 ft. deep over all, and is on a clear span of 48 ft. The ends of the cantilever beam bars are securely embedded in a large ferro-concrete beam partition extending between the ground and first floors. The reinforcements generally of the cantilever beams are clearly shown in the section. The side galleries in the main hall overhang a distance of 10 ft. 4 in., the cantilever beams being 3 ft. deep, and the bars anchored back directly to the ferro-concrete columns supporting them. The test which was made on this portion of the gallery about eight weeks after it was concreted was extremely satisfactory, the maximum deflection being only 1/10 in., equivalent to 1/40 of the span, when the

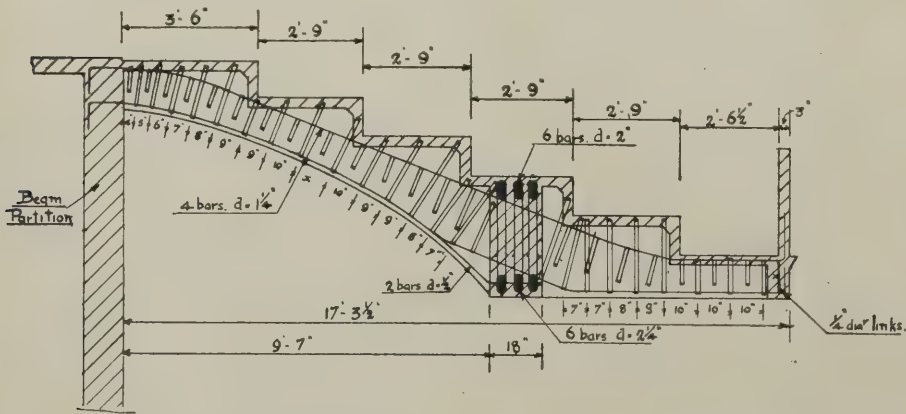


FIG. 4.—SECTION THROUGH END GALLERY, MAIN HALL.

load was equal to 50 per cent. more than the load for which the gallery was designed.

The floor over the main hall is carried by arched beams very similar in construction to the arched beams at the floor level below over the gymnasium, while, in addition to these, in four cases there is a method of construction with regard to carrying the load encountered which is practically confined to ferro-concrete. It must be borne in mind that, having a span of 50 ft. to contend with, since the height from second to third floor levels is only 11 ft. 6 in., any beams in the third floor projecting 2 ft. or more below the ceiling would be most objectionable. The difficulty was got over by constructing beam partitions to carry the two floors, a part elevation being shown in Fig. 5. The beam illustrated, in addition to carrying a considerable portion of the second and third floors, also carries a part of the brick wall next the internal area, including the loads which come on to this wall from the third floor and the roof. The beam, which reminds one somewhat of a trussed steel girder in construction, has three door openings in it, 6 ft. by 7 ft. 3 in., 4 ft. 9 in. by 8 ft. 3 in., and 4 ft. by 8 ft. 9 in. respectively, as well as a window opening 3 ft. by 4 ft. 3 in.; and although the amount of concrete in the beam is only 507 cu. ft., from the mere fact that the weight of the reinforcing steel is nearly 7 tons, some idea of the enormous amount of work in dressing such a beam—that is, arranging all the steel in position—is quickly apparent. The beam at the top and bottom is 12 in. thick, whilst the panelling is only 6 in. thick, the main tension bars at the centre of the beam being eight in number, $d=1\frac{1}{4}$ in. The bars to take up the shear stresses and to rigidly connect the bars forming top and bottom booms of the beam are clearly shown. The bars in the compressive flange are $1\frac{1}{8}$ in. diameter, and at the centre are six in number, the bars in the 6 in. panels being $\frac{1}{2}$ in. diameter at 6 in. centres, both ways. The main connection of the bars in the top and bottom booms consists of four bars $d=1$ in. at intervals in the beam, which are hooked right round the respective bars, the concrete being increased to 12 in. thick for a distance of 9 in. These connecting bars are linked together by $\frac{1}{4}$ in. diameter links at 6 in. centres, and, as shown on plan, are practically 12 in. by 9 in. columns, acting as ties between the two booms of the main beam. These partition beams are unique, there being no other example in London of beams of this type and magnitude.

There are three other such beams between the second and third floors over the main hall, all being designed and constructed on similar principles, constituting an arrangement whereby the main hall floor, second and third floors are securely framed together, forming one huge monolith, somewhat similar to the cellular construction of the Britannia Bridge, which must necessarily tend to make the resisting powers of the various members when working together greater than when working individually, and also to add to the stability of the building generally.

At the third floor level, on the north-west side of the building, the internal area is increased in width; the main 14 in. area wall, in its new position, together with the loads coming on it from the fourth and fifth floors and mansard slopes, is carried by another partition beam,

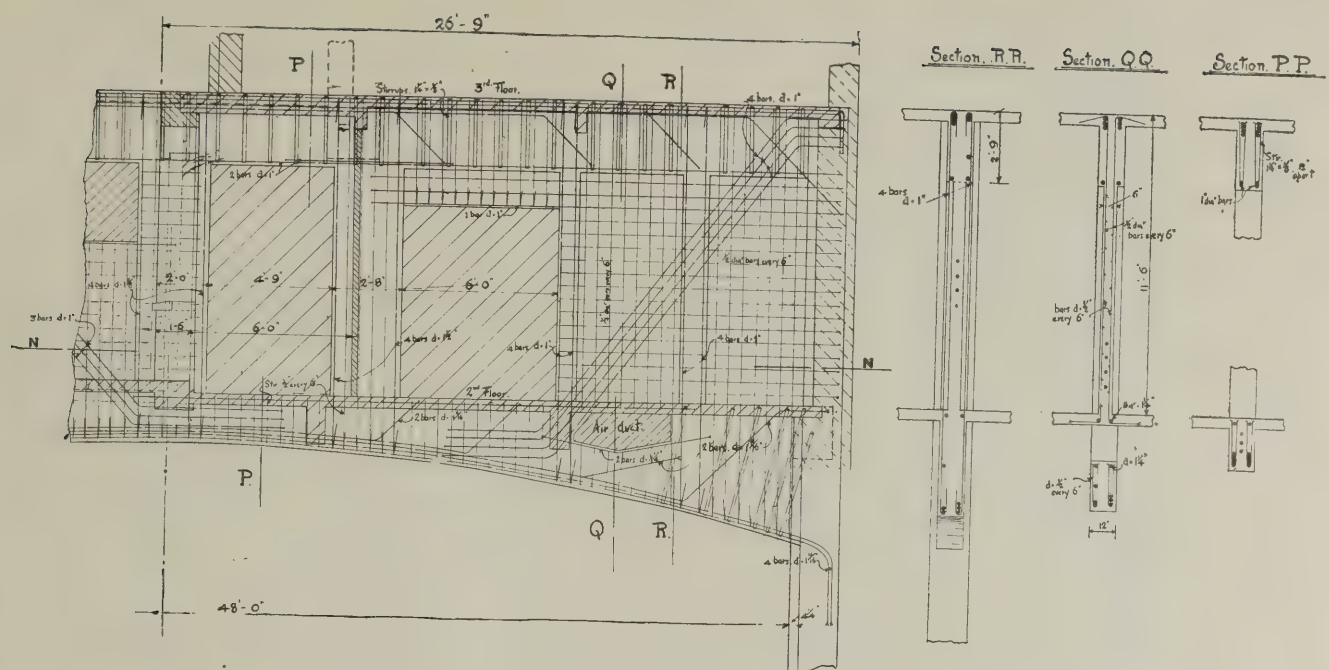
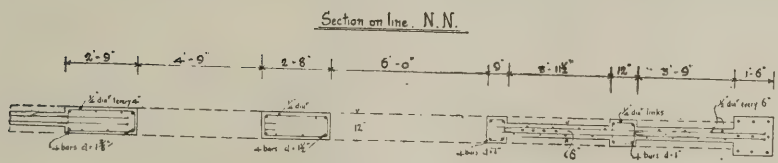


FIG. 5.—PART ELEVATION AND SECTIONS OF BEAM PARTITION.



THE NEW CENTRAL Y.M.C.A., BUILDING, TOTTENHAM COURT ROAD, LONDON.

which extends between the second and third floors, and forms the division wall between the photographic section and the corridor. This beam, which is 13 ft. 2 in. deep, is similar in construction to the other partition beams described, being somewhat lighter in reinforcement, since, although it is 67 ft. long over all, it is supported in two places by a ferro-concrete beam and brick wall respectively, running at right angles to it, thereby

reducing the effective span to about 29 ft. The beam is 6 in. thick between the floors, and where the bars occur for connecting the top and bottom booms of the beam, the concrete is increased to 12 in. thick for a length of 9 in., forming columns, as in the other partition beam described, at about 5 ft. 6 in. centres. Compared with the partition beam over the main hall, this beam only contains 487 cu. ft. of concrete and about two tons of reinforcing steel.



BEAM PARTITION IN COURSE OF CONSTRUCTION.

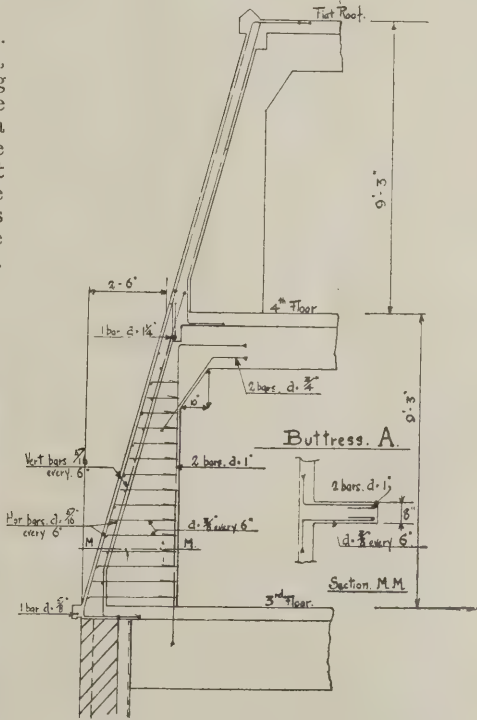


FIG. 6.—TYPICAL SECTION, MANSARD ROOF.

The mansard slopes, which commence on all sides of the building at the fourth floor level (those facing the area of the Great Russell Street continuing down to the third floor), as well as the dormer cheeks and heads, are all in ferro-concrete throughout. The slopes, a typical section of which is shown in Fig. 6, follow the usual practice, being arranged as flooring slabs 5 in. thick, sup-



GENERAL VIEW OF WORKS IN PROGRESS.

ported at the floor levels, buttresses being formed to stiffen the walls and pick up the beams of the floors, in sloping part of roof, where required. The reinforcement generally in the walls consists of $\frac{1}{4}$ in. diameter bars at 6 in. centres running both ways at each side of the wall, while in the section shown the buttresses have two bars $d=1$ in. on the tension side, the bars being continued well into the horizontal floor beams at top and bottom; the shear members consist of $\frac{3}{8}$ in. diameter bars at 6 in. centres hooked round the tension bars of the buttresses, bent at right angles and embedded into the slopes.

The dormer heads, which occur all round the building at roof level, some of which are circular and some square, were the subject of a special study, the concrete on being freed from the mould presenting a good finished surface, thus doing away with the cement rendering usually adopted in such cases. The timber moulds were made in the joiner's shop, the material being wrought, and photographs taken on the removal of the moulds by Mr. Lake, the clerk of works, plainly show the remarkable degree of finish obtained.

The main roof at fifth floor level is 5 in. thick generally, the beams and flooring slabs being arranged on the usual Hennebique principle; they call for no special comment, the carrying bars in the flooring slabs being $\frac{1}{4}$ in. or $\frac{3}{8}$ in. diameter, arranged at about 6 in. centres, alternately straight and curved, whilst the bars near the top of the slabs are $\frac{1}{4}$ in. diameter, running at right angles to the carrying bars every 6 in. These bars serve to lessen the effects of expansion and contraction on the concrete, due to the exposure to varying temperatures.

The falls necessary on the roof are made with a weak mixture of cement and coke breeze covered with a cement screed. This method of protecting ferro-concrete work exposed to the changes of weather has proved to be entirely satisfactory, especially where the spans of the beams have been large and the effect

of any expansion or contraction on the supporting brick walls or columns is a serious matter.

The water-supply tanks for the building are stored on the sixth floor, which is in the tower at the corner of Tottenham Court Road and Great Russell Street. This floor, which in addition carries the eighth floor and the dome, is carried at this level by two main beams 38 in. by 15 in. and 35 in. by 15 in. respectively, supported by ferro-concrete columns (two of which come from the basement and two of which are carried at the fifth floor level), the beams each having eight bars $1\frac{7}{8}$ in. diameter in tension and compression, and to resist the heavy shearing forces $1\frac{1}{4}$ in. by $\frac{5}{16}$ in. hoop steel stirrups. The flooring is 5 in. thick, being heavily rein-

forced with $\frac{1}{2}$ in. diameter bars at bottom both ways and $\frac{3}{8}$ in. diameter bars at top both ways, all bars at 6 in. centres. This floor, the area of which is about 77 sq. yds., is, owing to the heavy nature of the loads carried, easily the most heavily reinforced portion of the whole building, the total amount of steel used being about 9 tons, which works out at about 260 lb. of steel per yard super. of flooring.

The seventh floor, which is in the tower, assumes a circular shape, and is carried by four columns 9 in. by 9 in. and four columns 10 in. by 10 in., all of which start from the sixth floor below, the four larger columns continuing up to carry the eighth floor, which is also circular and which supports the ferro-concrete shell to the dome. A section through the



COLUMNS AND HALL STAIRCASE IN COURSE OF CONSTRUCTION.

shell of the dome in shown in Fig. 7; the covering stonework is supported by the eighth floor as shown, whilst the top stones are carried directly by the annular ferro-concrete ring 5 ft. 5 in. in diameter. The reinforcement of the ring consists of one bar $d=\frac{7}{8}$ in. at top and bottom, bent circular and lapped for a distance of 18 in., the bars in the slab being $\frac{3}{8}$ in. diameter every 6 in. both ways at top, and $\frac{1}{2}$ in. diameter every 6 in. apart, both ways, at the bottom. The bars in the shell are $\frac{1}{2}$ in. diameter 4 in. apart, the vertical and horizontal reinforcement being the same, all the horizontal bars being well lapped, while the vertical bars are continued down into the eighth floor slab at the bottom, and bent at right angles for a distance of 18 in. on each side for anchorage, the top ends being hooked round the $\frac{3}{8}$ in. bars in the annular ring at top, thus securely binding together the top slab and the walls. The walls are 5 in. thick, thickened out at base to 15 in. for a height of 2 ft. 6 in., the slab at the top being 10½ in. thick at the centre. There are eight open panels in the lower part of the wall, two bars $d=\frac{3}{4}$ in. being put in horizontally to take the ends of the vertical wall bars at the top of the opening, these bars also being well lapped.

Actual loading tests, in addition to the one on the gallery already mentioned, have been made on several selected portions of the building, and all with very satisfactory results; in no case was there any semblance of permanent set after the load was removed. A typical test might be mentioned on one of the second-floor beams over the library, the span being 28 ft., the beam being 12 in. below the 5 in. floor by 7 in. wide, reinforced with four bars $1\frac{1}{8}$ in. diameter, the shear members being stirrups made of $1\frac{1}{4}$ by $\frac{5}{16}$ in. hoop steel. A section was loaded to 50 per cent. above the normal working load as usual, deflectors being placed at points marked 1, 2, and 3, the calculated maximum deflection at the centre of the beam being 1.6 millimetres, or $1/5,330$ of the span, the figure embodied in the contract being $1/600$ of the span.

In conclusion, it is interesting to note that the total amount of concrete in the job used in connection with the reinforced concrete work is, roughly, 3,600 yds. cube, representing about 3,150 yds. cube of $\frac{3}{4}$ in. Thames ballast, 1,560 yds. cube of Thames sand, and 1,025 tons of Portland cement, while the amount of steel for reinforcing purposes is 510 tons.

The building, which is now completed, was designed by Mr. Rowland Plumbe, F.R.I.B.A., the ferro-concrete work being carried out by Messrs. Holloway Brothers (London), Ltd., Messrs. L. G. Mouchel and Partners acting as consulting engineers for the Hennebique ferro-concrete construction, and Mr. W. Lake as clerk of works.

THE PROPOSED CEMENT COMBINATION.

With reference to the particulars which were published in last week's issue regarding the formation of the British Portland Cement Manufacturers, Ltd., to take over and amalgamate a number of cement works outside the Associated Company, the Press Association states that the shareholders in the Saxon and Norman Portland Cement Companies, which have extensive works on the Newmarket side of Cambridge, received information on December 22nd that,

subject to ratification, arrangements have been made to sell the local factories to the new company.

It is stated that Lord St. Davids will be the chairman of the company, which will have an issued capital of £3,500,000, guaranteed by a number of leading London banking and financial houses. No public issue of stocks or shares or circulation of prospectuses will be made.

It is stated that the new concern will control an output of about 1,500,000 tons of cement annually. The price to be paid for the local companies, it is said, exceeds £185,000. The new company will have a working agreement with the Associated Cement Company, of which Lord St. Davids is also chairman, and the capital of both companies will amount to about £12,000,000. The two companies will control five-sixths of the cement production in the country. Mr. A. C. Davis, managing director of the Saxon and Norman Companies, will be managing director of the new company.

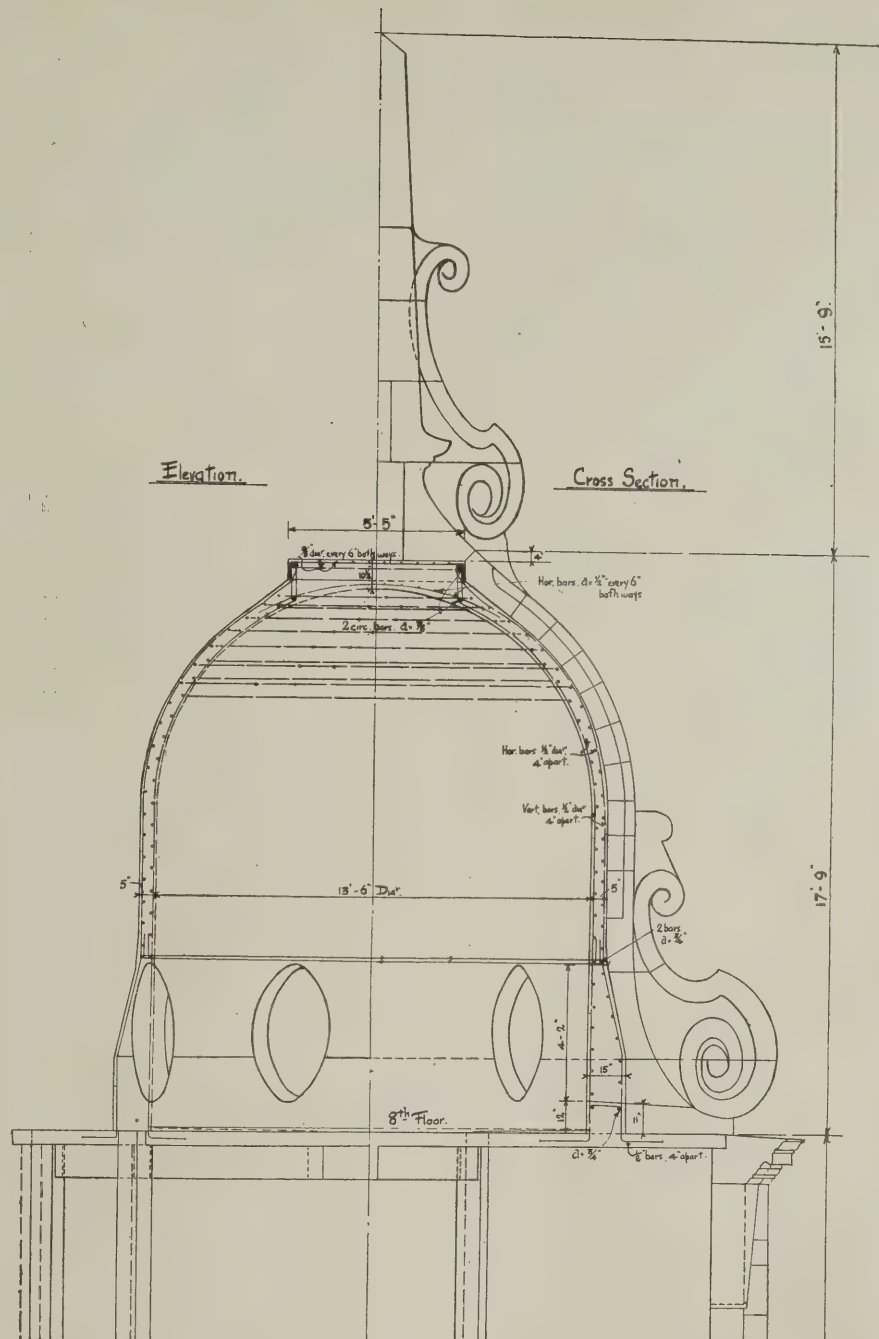


FIG. 7.—REINFORCED CONCRETE DOME. NEW CENTRAL Y.M.C.A. BUILDING, TOTTENHAM COURT ROAD, LONDON.

THE LIÉGE IRON AND STEEL INDUSTRY.

In reviewing the iron and steel industry for 1910 the American Consul for the Liège district of Belgium states that the output from 17 blast-furnaces, the number in operation during that year, was 784,890 tons of pig iron, valued at 50,320,000 francs, or 95,160 tons in excess of the figures for the previous year. The total consumption of ore was 2,009,250 tons. Of this amount 1,395,390 tons were imported from France, 369,590 tons from Luxembourg, 79,370 tons from Spain, 62,520 tons from Norway and Sweden, 49,010 tons from Germany, 25,620 tons from India, 7,400 tons from the United States of America, and 2,267 tons from other countries. The quantity obtained from domestic sources amounted to less than 1 per cent. There were six steel works in operation, with an increased output.

THE LOCK-WOVEN MESH SYSTEM OF REINFORCEMENT.

Fig. 1 of the accompanying diagrams shows a detail cross-section of the large Mansard roof that was erected to St. Anne's Vestry Hall, Soho. The "Lock-Woven Mesh System," which was employed here, as well as in the steel truss roof illustrated by Fig. 2, consists of a mesh formed of main or tension wires and secondary or transverse wires; the former being spaced from 3 in. to 6 in. apart, the latter about twice the distance apart of the tension wires. A lock or knot is mechanically placed over the tension and transverse wires at their intersection in the formation of the mesh, so that under ordinary conditions the wires cannot be displaced after fixing of the lock knot, which thus establishes a mechanical bond.

Lock-Woven Mesh, which is manufactured in an electrically driven loom of the most perfect type, is only limited in dimensions as to the width of the sheet or roll, the length being of any extent desired; although, as in practice it has been found that a single roll of mesh weighing more than 5 cwt. would be inconvenient to handle, the length may be said to be virtually governed by the weight. The average length of a 5 cwt. roll, however, being about 150 ft., and this being sufficient for the average building, no inconvenience arises.

The mechanical bond created by the knots forming the locks prevents the possibility of any slipping of the reinforcement within the concrete; and as, in the average building, a single continuous sheet of Lock-Woven Mesh reinforce-

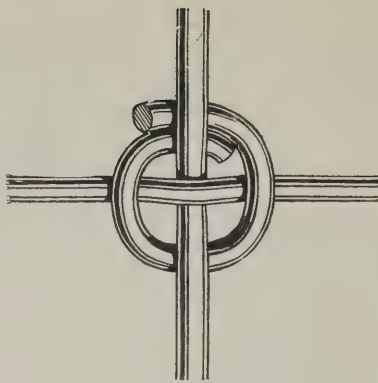


FIG. 3.

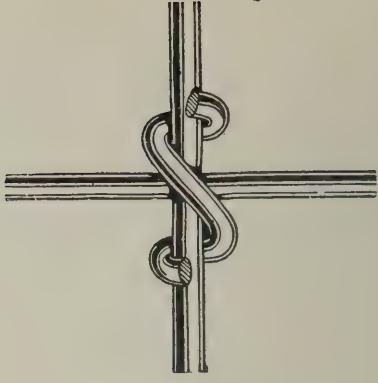


FIG. 4.

or roof-panel, so that the system is particularly serviceable for foundations, floors, roofs, and walls of great length, especially for factory and warehouse floors where uneven loading may occur. Drawn steel wire, having an elastic limit of 64,000 lbs. per sq. in., with an ultimate strength of 89,000 lbs. per sq. in., is employed in the manufacture of Lock-Woven Mesh; the high elastic limit of the wire being very noticeable.

Lock-Woven Mesh is made with two styles of knots—namely, a lock knot (Fig. 3) and a spiral knot (Fig. 4). With the lock knot the tension wires are limited up to No. 7 s.w.g., but with the spiral knot, the tension wires may be of any size up to No. 3 s.w.g. The standard widths of fabric are 4 ft. and 5 ft., and the material is stocked in these widths in rolls of 200 ft. for the lighter weights, and 150 ft. for the heavier weights; but, as noticed above, there is no limit as to

length. A handbook illustrating and explaining the system in various applications—to floors, roofs, staircases, bridges, sewers, culverts, water-mains, reservoirs, swimming baths, shallow tanks, etc.—has been issued by Messrs. George F. West and Co., Caxton House, Westminster, who have taken over the Lock-Woven Mesh system from Messrs. J. H. Tozer and Son, Ltd., and this book is further valuable as containing useful diagrams, folding plates, and formulæ, as well as a unique history of reinforced concrete; and there are several views of important buildings in which the Lock-Woven Mesh system has been employed.

Reinforced Concrete in Yokohama.

A new building constructed of reinforced concrete, and provided with an automatic electric lift, has been completed in Yokohama for the Mitsui Bussan Kaisha. This instance of the utilisation of reinforced concrete is attracting much attention among builders and contractors there, and will probably lead to further developments.

Postponement of Meeting.

The presidential address on "Engineering Considerations in Wireless Telegraphy," which Commendatore Marconi was to deliver before the Junior Institution of Engineers on January 5th, has been postponed.

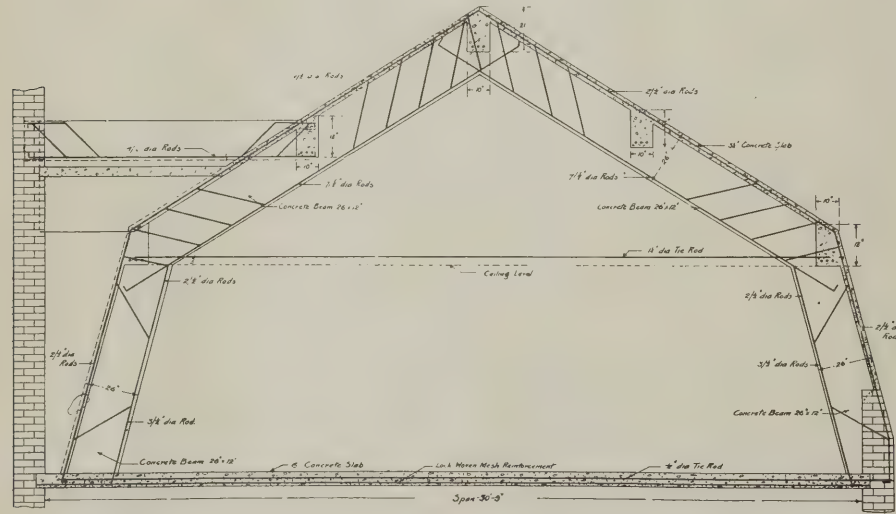


FIG. 1.—DETAIL OF MANSARD ROOF, ST. ANNE'S VESTRY HALL, SOHO, LONDON.

ment may be employed in the foundations, floors, and roof, it follows that a continuous bond is established in the concrete throughout; and if the mesh is anchored into the beams or walls at both ends, a considerable amount of rigidity is given to the structure. The continuity of the reinforcement also tends to economy in the amount of reinforcement to resist loading stresses, since slabs so reinforced may be considered as having fixed ends; while laps in the direction of the length of the sheets being seldom required, a less area of mesh will suffice than would be the case if the ends had to be lapped at comparatively short intervals; and the consequent economy in labour is obvious. What is even more important, the continuity of the reinforcement is a guarantee against the collapse of any floor, deck,

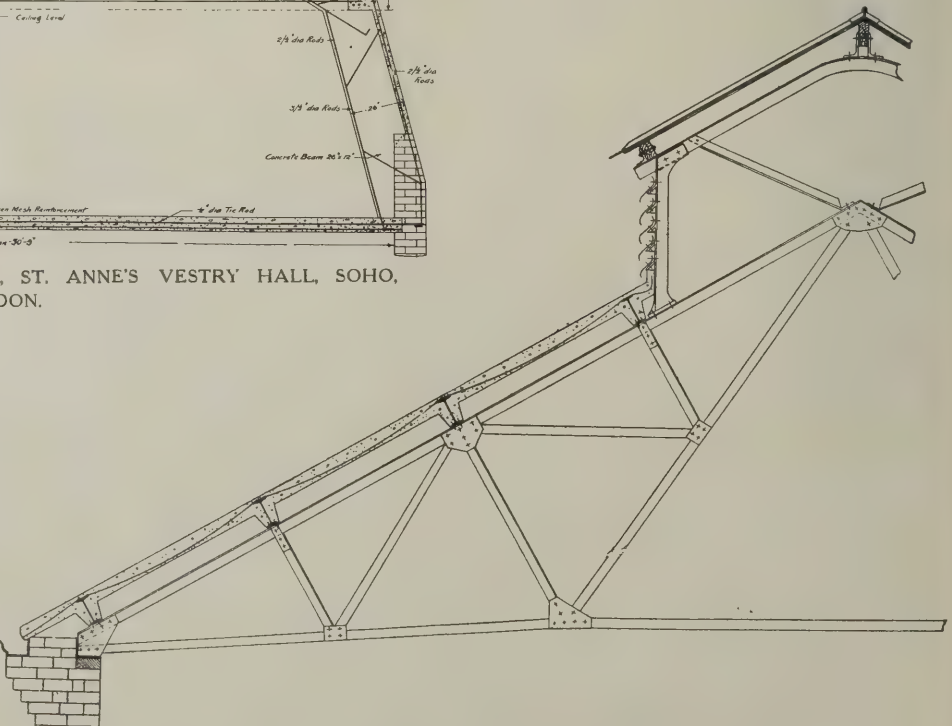


FIG. 2.—APPLICATION OF REINFORCED CONCRETE ROOF TO ORDINARY STEEL ROOF TRUSS.

SOME RECENT WORKS IN
REINFORCED CONCRETE.*

BY 'G. C. WORKMAN, M.S.E., M.C.I.

The object of this paper is to describe a few of the numerous works recently executed in reinforced concrete, and to bring out some of the more interesting features of each particular case and to show how various difficulties have been overcome.

One of the first large buildings with which I had to deal was the second tobacco warehouse, for the Bristol Docks. This work was carried out under the Docks engineer, and the contractors were Messrs. W. Cowlin and Son, of Bristol.

The general dimensions of the structure are: 200 ft. in length by 102 ft. in width and about 96 ft. in height, and there are altogether nine floors calculated for a superload of $1\frac{1}{2}$ cwt. per square foot.

This building is identical in appearance to the first tobacco warehouse, but the inside is in reinforced concrete instead of being in steelwork with concrete floors.

Besides the advantages of fire resistance and economy which this building offers over the first one, the internal accommodation is larger on account of the walls being only about 14 in. in thickness throughout the height of the building, instead of the considerable thickness of brick walls required in the first building. These thin brick walls or panels were supported at each floor by lintels, and the building has been divided in two by a partition in reinforced concrete 6 in. thick.

The various floors were arranged in such a manner as to minimise the risk of fire by cutting off any particular floor from the others. The level of the floors is slightly raised at all lift openings and doors, so that it would be possible to flood any particular floor with a couple of inches of water if required.

This warehouse has been erected on reinforced concrete piles varying in length between 40 and 50 ft. 650 piles were required for the foundations.

The load coming on each of the internal pillars amounted to 300 tons, and it was necessary, in order to transmit this load on to the ground, to group six piles together, uniting the heads by means of a cap.

Each pile was calculated to stand a safe load of 56 tons, and the diameters of the piles varied between 14 in. and 15 in.

The piles were driven into the ground by means of a steam monkey weighing two tons. The particular pile shown on the screen took about three-quarters of an hour to drive to its final set at a depth of about 45 ft.

In showing a photograph of one of several buildings erected at Rainham, Essex, for Messrs. J. C. and J. Field, Ltd., the architects being Messrs. Scott and Fraser, and the contractors, Messrs. William King and Son, of London, the author explained that the site is situated on the riverside and is extremely marshy, so that the buildings had to be constructed on spread foundations or rafts in reinforced concrete.

It is noticeable that although this building contains very heavy machinery and tanks for the manufacture of soap, it has been possible to spread these loads on to the ground evenly at a rate of only about a quarter of a ton to half a ton per square foot.

Reinforced concrete buildings, being monolithic and lighter than brick or masonry work, are very well adapted to cases where unequal settlement is likely to occur, especially when such buildings are erected upon a reinforced concrete raft.

Of extensive premises erected in the city for Messrs. J. Grossmith, Son and Co., perfumers, the architect was Mr. H. A. Saul, and the contractors were Messrs. Peacock Bros., of Brixton, for the first portion of the building, and Messrs. Stuart's Granolithic Co., Ltd., of London, for the second portion. The building has altogether eight floors, the interior and roof being entirely in reinforced concrete. An interesting feature of the building is that the heavy front and side lintels are supporting the whole of the brickwork above. A considerable amount of difficulty was experienced in the design of the roof, owing to the fact that one of the slopes is much longer than the others, producing unequal thrusts. All the steel units for the various beams and pillars were prepared at Brixton in the contractors' workshops, and carted on to the site ready to be placed in position. It was necessary to proceed in this manner owing to the lack of room on the actual site of the building. Of the hostel for women students at the Birmingham University, the architects were Messrs. Buckland and Farmer, of Birmingham, and the entire building was carried out by Messrs. Richard Fenwick, Ltd., contractors, also of Birmingham. The total area of flooring was approximately 13,000 square feet. The floors were tested with a load 50 per cent. in excess of the specified superload, and the deflection did not exceed a thousandth part of the span.

There seems to be a considerable difference of opinion between the various methods of stopping the concreting in floor slabs, in beams, and in pillars. Personally, I am of opinion that the best method of stopping the concrete of the floor slabs is to stop the work over the beams, also that the concreting of beams should be stopped over the points of support. Concerning the pillars, the footings should be made first and the body of the pillar carried up to the level of the soffit of the beams, the remaining portion being concreted at the same time as the beams.

One of the most interesting buildings with which I have been associated is the new Western District Post Office, which was erected about two years ago under the supervision of the Office of Works, the contractors being Messrs. William King and Son, of London. This building, which is situated between Cavendish Square and Wimpole Street, comprises a block of 200 ft. frontage and 160 ft. in depth, with basement, ground floor, first and second floors, and flat roof. Owing to the fact that only four large pillars were allowed in the centre of this floor space, the spans between these pillars and the outer walls varied between 45 ft. and 39 ft., so that the four pillars in question support loads of over 200 tons each. One of the chief features of the building is that the ends of the principal beams carrying respectively the first floor, second floor, and roof are suspended bodily by means of strong steel stirrups to upper beams 6 ft. high, forming the internal walls surrounding the inner court above the various floor levels. By this means it was possible to obtain a maximum height for the windows, which was a condition stipulated by the Office of Works. This condition, however, brought about a question as to whether

this method of suspension could be used without danger, the two beams having a span of 39 ft., and supporting the first floor with a superload of 1 cwt. per square foot, the upper supporting beam having a span of 45 ft. There was no evidence that this particular arrangement had ever been adopted before, at least for spans of such large dimensions. The problem was solved in a satisfactory manner, with the result that the two suspended beams 39 ft. long each, and the beams across the inner court supporting the skylight, appear to have been made in one single span of about 118 ft.

Another noticeable feature is found in the extensive beams over 12 ft. in height, which carry the other end of the suspended beams. These 12-ft. beams have a span of 45 ft., and it was necessary to provide in the portion of these beams underneath the first floor a series of large windows situated below the neutral axis of the beam, which occurs approximately at the level of the first floor. Large areas of flooring were tested, the specification being one and a half times the superload, and the deflection not to be greater than 1-600th of the span. The deflection recorded in the beams did not, however, exceed 1-1500th to 1-5000th of the span, and no permanent deflection was noticed.

I would take this opportunity to state that in my opinion it is essential to place underneath the beams which are to be tested a few strong emergency props not touching the soffit of the beam by about $\frac{1}{2}$ in. This has the effect of reassuring the men who are carrying on the loading operation, and it also has the effect of preventing any sudden collapse which might be due to unforeseen circumstances. In showing a view of the front elevation of the Western District Post Office in Portland stone, executed by Messrs. Galbraith and Son, the author remarked that all the other walls were made in reinforced concrete 5 in. thick. The London County Council By-laws which were shortly to be revised would, he hoped, encourage architects to study the question of reinforced concrete applied to the front elevation of buildings.

Among the views shown was one of a large factory erected about eighteen months ago at Bailiffe Bridge, near Leeds, for Messrs. T. F. Firth and Sons, Ltd., carpet manufacturers. The architects were Messrs. Walsh and Nicholas, of Halifax, and the contractors Messrs. Henry Atkinson and Sons, Ltd., of Leeds. The main building is four storeys high and 176 ft. long, with a width at one end of 70 ft. and at the other end of 111 ft., the building being in the shape of an L. The total floor area is approximately 52,000 square feet. The factory is built on a very steep incline, and to overcome difficulties of levels on the site from the ground to first floor a retaining wall 16 ft. high was constructed in reinforced concrete. The staircases throughout the building are also in this material. The work being situated in the very midst of the York stone district, local prejudice prevented treating the external walls as a distinctly concrete building. A compromise was effected by facing the main reinforced concrete pillars and the lintels of the various floors with local self-dressed wall stones 5 in. on bed. The recessed wall spaces under the salt-glazed brick arches are finished with rough-cast. The author was informed that this large factory does not exceed in price per super-yard of floor area a similar factory which was built twelve years ago in the same neighbourhood with steel girders and stanchions, wooden floors

*Extracts from a paper read at the twenty-first ordinary general meeting of the Concrete Institute on December 14th, 1911, at Denison House, 1296, Vauxhall Bridge Road, Westminster, S.W.

and stone walls. Fires are very frequent in this district, causing tremendous loss and inconvenience. The value of the carpets stored in this warehouse being very considerable, it was decided to adopt reinforced concrete for this building. In this particular instance a very large saving was effected in the yearly premiums owing to the low rate which the insurance companies are prepared to grant to buildings in reinforced concrete.

Other works described were the new Government buildings erected at Kingston, Jamaica, for the Government (architects, Messrs. Nicholson and Corlette, of London; the contractors, Messrs. William Cowlin and Son, of Bristol); the new King's House at Kingston, Jamaica, which contract was carried out simultaneously with the one previously described, under the same architects and by the same contractors; the new Holloway Money Order Department, which is the latest of a series of large buildings for the extension of post-office facilities in London, under the instructions of H.M. Office of Works (the work was executed by Messrs. William King and Son, of London; the completed elevation in brickwork and masonry having been carried out on a separate contract by Messrs. Leslie and Co., Ltd.); and several other works.

Dealing with the question of superloads, the author said he would like to mention that it had been his experience that architects and engineers are inclined to specify superloads which are obviously far more considerable than what is really necessary. This is probably due to the fact that in many cases reinforced concrete is a novelty to them, and by specifying a comparatively high superload they hope to guard themselves against failure of the work. It is well established, however, that any failures which have occurred have been due either to the premature removal of props and centering, or, in a few isolated cases, to faulty design, so that in reality nothing is gained in security by specifying a higher superload than is required. In the case of the Holloway building, the Office of Works, who are thoroughly acquainted with the use of reinforced concrete, have not hesitated to specify a superload of $\frac{3}{4}$ cwt. per square foot, which is quite ample for their requirements, and which has the advantage, of course, of being economical.

THE CONCRETE INSTITUTE TRANSACTIONS AND NOTES, VOL. III.

This volume, to which reference is made in another part of the present issue, contains, besides the matters there mentioned, a very useful collection of material. Numerous accessions to the library are recorded, and the notes include a series of abstracts of publications on concrete—an important feature which will no doubt be continued, and might be with advantage further developed. The lectures and discussions, visits, and other functions that occurred during the period covered are reported and illustrated; and the interim report of the Tests Standing Committee on "The Testing of Concrete, Reinforced Concrete, and Materials Employed Therein," is included, as well as the report of the Science Standing Committee on "The Rusting of Steel Inside a Concrete Covering," and that of the Reinforced Concrete Practice Standing Committee embodying suggestions on "The Standardisation of Drawings on Reinforced Concrete Work." The paper read in June by Mr. Alfred E. Corbett,

F.R.I.B.A. (of Woodhouse, Corbett and Dean), on the Y.M.C.A. Building, Manchester, is accompanied by a dozen folding plates, as well as smaller illustrations.

TRADE AND CRAFT.

Callender's Dampcourse Specialities.

We have received for examination and notice a sample of Callender's "Ledkore" Dampcourse, which, as its name indicates, consists of a core of sheet lead with a special bitumen covering on both sides. It is an ideal combination, because it admits of the lead being used in economically thin sheets, and also serves to protect it. Moreover, the bitumen, when, as in the present instance, it is of the right quality, is pliant without being squeezable, and thus can accommodate itself to the possible settlement of the building in which it is used.

In a pamphlet "Concerning Dampcourses," issued by Messrs. George M. Callender and Co., Ltd., contractors to the Admiralty, War Office, Office of Works, etc., 25, Victoria Street, Westminster, the various materials in general use as dampcoursing are passed in review. It is mentioned that a double layer of good sound slates, set in cement, so as to break joint, will fulfil the first two of the following three essentials of an effective dampcourse: (1) Absolute impermeability to moisture; (2) a "life" equal to that of the building itself; and (3) pliability. Slate, however, is too rigid to resist successfully the effects of settlement; and although it is still used by builders of the old school, it can only be regarded as a makeshift. Of course, sheet lead would be far preferable to slates, but then the necessary thickness of the lead would render its use prohibitive. Moreover, it seems to be obvious that the unprotected lead would be much more liable to the corrosion from which lead is not entirely immune. A dampcourse properly made from pure refined natural bitumen, without admixture, is no doubt always effective; but occasionally an excess of the material may, in certain circumstances, exude beyond the face of the wall, and this, besides causing unsightliness, may give rise to misgivings that, while really groundless, are sometimes best avoided; though in circumstances in which exudation does not occur, or does not meet with objection. Callendrite dampcourse is of proved efficacy. The lead and the bitumen in combination, however, are mutually helpful towards the desired object of producing a really perfect dampcourse, at once impervious and permanent, and unaffected by climatic changes.

Messrs. Callender's "Ledkore" dampcourse is made in three grades—A, B, and C—differing in the thickness of the lead core used, and is put up in standard rolls 24 ft. long, cut to the usual wall widths. As the inventors, well-nigh forty years ago, of the original pure bitumen damp-proof sheeting, which is known to architects and builders all over the world, Messrs. Callender hold a unique position in the waterproofing trade, and their extensive experience has enabled them to evolve a special bitumen material which is dense and tough, yet perfectly pliable. The firm publish a list of places in which their materials have been used. These include cathedrals, churches, and chapels; public buildings, banks, and institutes; factories, business premises, offices; schools and colleges;

barracks, workhouses, police and fire stations; hospitals, infirmaries, and asylums; hotels, inns, and theatres; estates, residences, shops, etc. The mere classification is of formidable extent; and the details occupy several pages of the firm's catalogue, in which there are also many pages of views of important buildings in which the firm's dampcourses have been adopted. There are given, besides, the results of several tests of the firm's dampcourses; the purity and quality of the materials, and their efficiency in use, being fully attested by such well-known authorities as Messrs. David Kirkaldy and Son, Mr. W. H. Stanger, Mr. H. Wilson Hake, Mr. A. Dupré, and Mr. H. Graham Harris.

John Tann's Safes and Doors.

The King and Queen, in travelling on board the "Medina" to India, necessarily took with them the costly Crown Jewels, for display at the Durbar, and these were kept secure in a safe supplied by John Tann, of 117, Newgate Street, E.C., who is able to state, in the catalogue now before us, that "No John Tann's fire-resisting safe has ever had its contents destroyed by fire," and that "No John Tann's thief-resisting safe has ever been opened by burglars."

The firm (originally named E. Tann and Sons) invented and patented in 1843 the system of rendering safes fireproof which is now generally in use. The fire-resisting composition employed by John Tann consists of "a light non-conducting mineral substance intimately mixed with a crystalline material; the former preventing the great heat reaching the contents of the safe in the event of a fire, and the latter, by giving off some of its water of crystallisation, moistening the contents and rendering it absolutely impossible for them to get burnt." John Tann, it is mentioned, was also the originator of the compound drill-proof unbreakable steel plate which was patented in 1865, and consists of alternate layers of hard high carbon steel and tough mild steel rolled and welded together into one solid plate; the combination of tough mild steel and the high carbon steel producing a plate which is unbreakable as well as drill proof. An up-to-date innovation is a device for protection against the oxy-acetylene blowpipe.

Besides a large array of safes of various sizes and patterns, adapted to a great variety of purposes (including special designs for use in ecclesiastical buildings), the catalogue contains a special section showing the "Anchor Reliance" and other fire and thief-resisting doors and frames for a comprehensive variety of purposes and situations, and of many different patterns. Full particulars of these are given in the catalogue, in which also are listed many special locks, steel boxes, shelves, and office fittings generally. No architect specifying fittings for banking and commercial premises, etc., should fail to consult this catalogue.

Some New Tiles and Bricks.

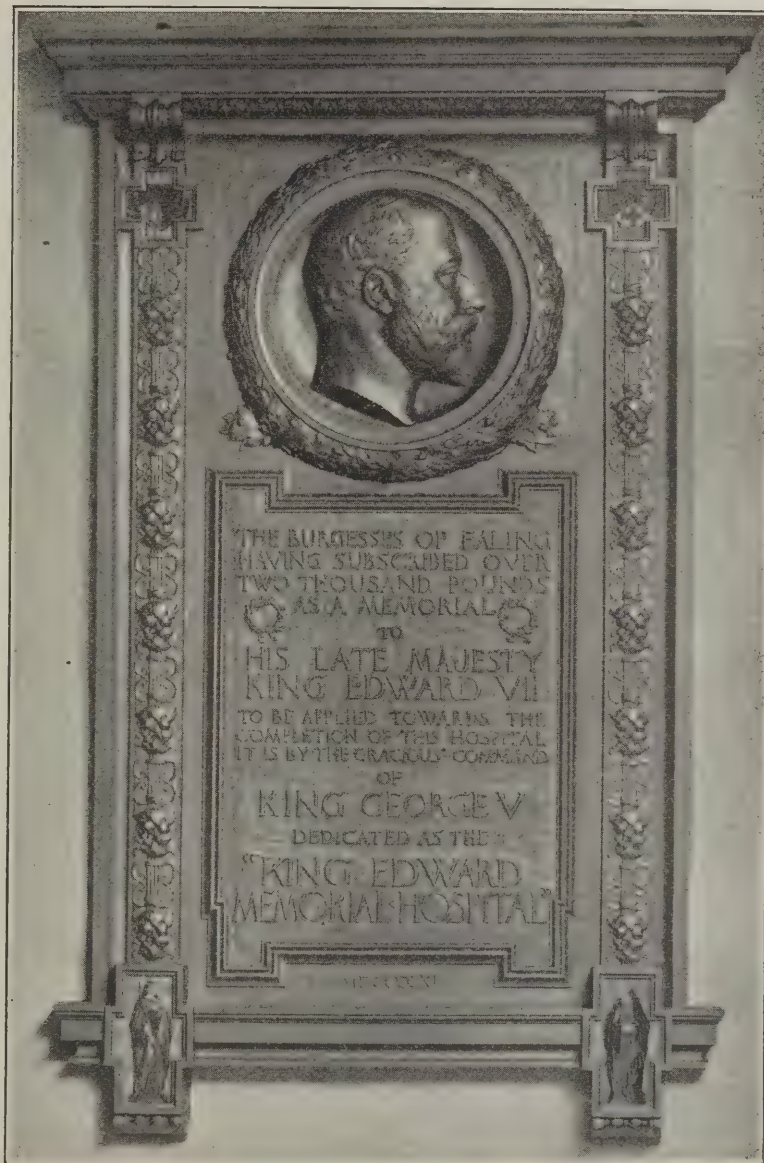
Messrs. James Brown (London), Ltd., of Essex Wharf, Durward Street, Whitechapel, are now supplying a hand-made sand-faced roofing tile (holed and nibbed), 11 in. by 7 in. by $\frac{5}{8}$ in., made at their Brentwood brickfields and, in addition to the red moulded bricks which they have manufactured for the past thirty years, they now supply 2 in. mouldings and window architraves of antique designs; a special catalogue relating to the latter has been issued recently, a copy of which can be obtained upon application.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 10th, 1912.

Volume XXXV.

No. 886



MEMORIAL BRONZE IN EALING HOSPITAL.

This memorial was designed by Messrs. Hall-Jones and Cummings, architects, of Westminster. It was modelled by Mr. Frank Bowcher, the enamels in the corners being by Mr. Nelson Dawson.



DETAIL OF GARDEN ENTRANCE, "THE HOO," WILLINGDON, NEAR EASTBOURNE.
EDWIN L. LUTYENS, F.R.I.B.A., ARCHITECT.

Extensive alterations and additions have been carried out at "The Hoo," Willingdon, under the direction of Mr. Lutyens, the original building having largely disappeared in the process. The new work displays many features which have become characteristic of the architect, the rubbed-brick niches over the doors to the dining-room and the drawing-room being particular instances. Thin old hand-made local bricks and Portland stone have been used for the exterior, the roofs being tiled.

THE ARCHITECTS' & BUILDERS' JOURNAL.

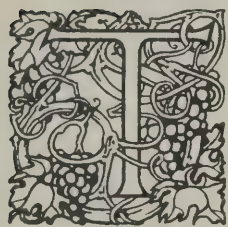
JANUARY 10th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 186.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The meaning of "Baroque" and "Rococo."



THE tendency of modern writers on architecture to divide everything up, as it were, into chapters seems to have led to the use of the words "baroque" and "rococo," as if they characterised some particular period or style in architecture. In the late Russell Sturgis's Dictionary of Architecture we find "Rococo" defined as "the architecture of the century beginning about 1660 A.D.," a period which includes St. Paul's and the Invalides—"are they 'rococo'?" We saw recently a new German publication entitled "Rococo Architecture," comprising a series of plates illustrative of Renaissance architecture generally, a great deal of which is in a refined, pure, and severe style, and certainly merits no such classification as would be implied by the cant term "rococo." But the worshippers of classification go further than that, for they appear to distinguish another style of Renaissance architecture as "Baroque," and to separate this from "Rococo." A fine volume of photographs of late Italian Renaissance architecture, just published by Mr. Heinemann, is entitled by its editor, Signor Ricci, "Baroque Architecture and Sculpture in Italy"*; and apparently in his view Baroque is a style that precedes Rococo, as, in speaking of France, he observes that "In France Baroque art coincided with Louis XIV., while the Rococo style flourished under Louis XV." According to that showing, then the quadrangle of the Louvre is Baroque, and the Panthéon is Rococo. It is surely only necessary to state it in that way to show the absurdity of such a classification of architecture under such terms.

Some writers on architecture seem to have applied the term "Rococo" to Renaissance architecture generally, much in the same way that, in the eighteenth century, the word "Gothic" was applied to mediæval architecture, rather as a half-contemptuous summary of a style of architecture which they thought uncultured. The word "Gothic," however, has survived to take on a different and more serious meaning; the word "rococo" has not, and ought not to be applied to a great style which includes many works of the highest and most serious type of architecture. "Rococo," if it has any definable meaning, means a style of decoration which is "rocky," i.e., exuberant in style and protuberant in surface (the latter seems to be the original meaning of the word), and rococo architecture means, or ought to mean, merely a vulgar and tawdry style of Renaissance architecture or ornament. There is a great deal of rococo ornament at Versailles, for instance, but the architecture of the palace, considered broadly, though rather commonplace, is not rococo in the proper sense of the word. And as to the supposed difference between "baroque" and "rococo," we defy any one to draw any definite line of demarcation between them, founded on distinctions of style. A writer may choose, arbitrarily, to group buildings of one date under the term "baroque" and those of another date under the term "rococo," but there is no kind of

architectural sense in the definition; both words really mean, not a style, but a florid and tawdry manner of design; and the only difference between them is that the one word is French and the other Italian.

We may therefore take Signor Ricci's volume of illustrations of "Baroque Architecture in Italy" as simply meaning late Renaissance architecture in Italy. How far this is from showing any distinct type which can be classed as baroque we see in plates 10 and 11 of the illustrations, in which the cupola of San Carlo al Corso at Rome faces an illustration of the Salute church at Venice. The two designs have nothing in common at all in point of taste and style; they are within twenty years of each other in date, but they might have belonged to different centuries. The Salute church is within every one's recollection; it is an example of exceedingly exuberant treatment of Renaissance materials; the Roman cupola, by Pietro da Cortona, which we reproduce, is a piece of sober refined work on severely Classic lines. The architectural atmosphere of Rome may have



CUPOLA OF S. CARLO AL CORSO, ROME,
BY PIETRO BERRETTINI DA CORTONA (1612).

*Baroque Architecture and Sculpture in Italy: By Corrado Ricci, Director General of Fine Arts and Antiquities in Italy. London: W. Heinemann, 1912. Price 25s.



THE MADONNA DI S. LUCA, BOLOGNA, BY CARLO FRANCESCO DOTTI (1723).

From "Baroque Architecture and Sculpture in Italy."

been more favourable to restraint of style than that of Venice; apart from that, the difference probably lay in the individual taste of the architects.

Signor Ricci, however, in his introduction to the collection, is manifestly the apologist of the more exuberant productions of late Renaissance architecture and sculpture. In England we do not regard these as the finest emanations of the genius of the Italian Renaissance; and it is rather significant of the state of feeling about art in modern Italy that Signor Ricci, who holds the responsible post of Director General of Fine Arts, should stand forth as sponsor, not for the real glories of the greatest period of Italian art, but for the architecture and sculpture which represents for the most part a period of decadence. What modern Italian sculpture has come to those who have seen its occasional examples sent to the Salon; fortunately very little of it gets as far as London. But one ceases to be surprised at this when we find the author of this short treatise lavishing admiration upon such specimens of rampant bad taste as the Piazza Navona and the Trevi fountains at Rome. It is strange to think of such work being admired in the country which gave birth to Donatello. That the late Renaissance Italians did exhibit a remarkable talent and originality in the treatment of fountains is quite true; but it is not in these scrambling heaps of contorted figures and artificial rockwork (in this case truly called "rococo") that their best efforts are to be found. The really good Italian fountains are those which are framed in a formal architectural setting. Of these there are many fine examples, in some cases with a good and refined architectural treatment, and they thoroughly understood the use of steps in connection with fountain architecture; we see this in the case of the fountain architecture at the Villa Mondragone at Frascati, and that (better known) at the Villa d'Este at Tivoli, both of which are illustrated in the book

under notice, and both show architectural framework of a fairly severe and refined standard, such as we are accustomed to associate with the idea of Italian architecture. We will select for illustration, however, one which shows what could be done in this way with the more corrupt and abnormal forms of late Italian Renaissance, that by Claudio Venardi in the garden of the Villa d'Este. Some of the architectural details of this are really horrible—the terminal figures, for instance, with their legs twisted into spirals; but it cannot be denied that there is an astonishing largeness and vigour about the whole thing, with its bold interrupted scroll pediment at the top. As a new work it would have repelled one; as an old and weatherworn erection it is rather striking. It is worth note that this does not belong, as one might have supposed, to one of the latest periods illustrated, and that its date (1573) is exactly the same as that of the soberly designed fountain with the staircase round it, in the grounds of the same villa. Here again, as in the case of the Roman and Venetian cupolas before referred to, the style of the two things might be a century apart; another proof that essentially "rococo" character lay as much in the personal taste (or want of it) of the designer as in any general tendency of the time.

This fountain, however, supplies an example of what Signor Ricci seems to think is the great claim to our admiration of the late Italian Renaissance both in architecture and sculpture—that it has more in it to astonish us than the art of any other period; and he quotes a saying of an Italian poet, Marino, whom he calls "the Baroque poet par excellence," to the effect that "the aim of the poet" is to *surprise* us, and that he who cannot astonish us is a failure. There could not be a worse dictum as a philosophy of art, if one wants the highest art; but it explains and to some extent excuses the aberrations of decadent Renaissance art. The time was one of bombast

and magnificence in the general order of life, and the architecture and sculpture expressed this. The author says, with some truth, that we can hardly judge of such art fairly in comparing it with our modern dress, life, and manners :—

"Let us take the magnificent theatre interiors built by the Bibiena. Many critics consider them overloaded with consoles and balustrades, and tormented with curves. But if for the audiences of to-day (the men with bald or closely cropped hair, in their tightly fitting grey or black coats, the women with their prim coiffures and discreetly rouged complexions), it were possible to substitute the resplendent public of the day when the Bibiena designed these theatres—the damasks, jabots, laces, embroideries, ribbons, feathers, and flowing wigs—and if we could illuminate these with thousands of canals inside and outside the boxes, would the architecture seem as heavy as it now does?"

There is some truth in that; and would not the saloons of these Baroque palaces, he says, the heavily decorated stucco ceilings of which seem about to crush us, have quite a different effect if filled with the old imposing furniture with its painting and gilding, candelabra, pictures with frames in high relief, etc.? He certainly makes a point there, and suggests a consideration that is sometimes overlooked in judging of old interiors without their original accompaniments.

It is true, too, that the period of the seventeenth and eighteenth century Italian Renaissance was one of a remarkable energy and vigour in architectural production; disapprove as one may of their taste, one cannot pass them over; they are too insistent for that. But to admit that is not to admit that they represent the best art; that is, however, what Signor Ricci's essay seems to imply; and, so far, it is a protest in a wrong direction. He seems to be obsessed with the greatness of Bernini; a fact which in

itself seems to show how completely modern Italy is separated from the artistic thought of other nations. No-where else in Europe would a critic think of regarding Bernini as one of the world's great artists. He was a most wonderful man, it is true, in his energy and versatility, and his power of swiftly modelling sculpture; but the sculpture most easily modelled does not always last the longest; and in architecture his one great idea is his colonnades before St. Peter's, for which we may well be grateful to him. His colossal baldachino inside the cathedral is a huge piece of pretentiousness; and he very nearly did St. Peter's a worse service by adding to the façade two of the most villainous-looking angle cupolas ever designed, drawings of which are extant. Mr. Tavernor-Perry, who went into the evidence on this subject some little time back, believed that one of these cupolas was actually erected; it so, apparently some Pope who realised what an ugly thing it was had the good sense to have it pulled down again. Bernini was a power in his day, no doubt; but to find him spoken of in Signor Ricci's essay as if he were a kind of heaven-sent genius and a regenerator of architecture and Italy is, in the present day, really astounding. Equally so is it to find the author selecting Sta. Maria della Salute as the finest church of the period in Italy; a building generally regarded merely with indulgence by architects, as one that is picturesque in spite of the crudeness of its detail.

The collection of nearly three hundred plates, however, to which Signor Ricci's essay is an introduction, is a fine possession in itself. It contains, it is true, a good deal of bad art, but it is a stimulating collection to the imagination in the wealth of architectural and sculptural detail shown in it, some of which contains suggestions which might be worked out to better account in a different manner of treatment. Among the architectural illustrations we reproduce the charming group of the church of Madonna di S.



STUCCO DECORATIVE WORK IN THE PALERMO MUSEUM, BY GIACOMO SERPOTTA (1704).

From "*Baroque Architecture and Sculpture in Italy*."



FOUNTAIN IN THE GARDEN OF THE VILLA D'ESTE, TIVOLI,
NEAR ROME, BY CLAUDIO VENARDI.

From "*Baroque Architecture and Sculpture in Italy.*"

Luca at Bologna, a work of the early eighteenth century, by Francesco Dotti; in spite of its late date, it is in a quiet and restrained architectural style which could not possibly be characterised as "baroque." The sculpture decoration by Serpotta from the Palermo Museum, dated 1704, is a good example of the sculpture style of the period, spirited in design, though deficient in the repose and severity of line which characterised the earlier and great school of Italian sculpture. We may add that in spite of the title of the book, the illustrations include a sufficient proportion of really fine examples of Renaissance architecture to give it a value for the architect. It is certainly a most attractive volume, excellently produced, and as such we have pleasure in bringing it to the notice of our readers.

London and Suburban Roads.

IN reference to the suggestions of the London Traffic Report that an understanding should be come to with local authorities around London as to providing for main routes through their districts, as part of a comprehensive plan, a correspondent of the "Daily News" argues that all such understandings would have to be made compulsory on the local authorities, or they would have small chance of being carried out to any practical accomplishment. Here he is very likely right. Local authorities, as a rule, consider nothing but the interests of their own borough, and one can imagine a local council resisting obstinately the proposal to create a wide road through their domain in view of its forming part of a main route out of London. They will argue—We do not require a road of any such width in our district; why should we go to the expense of making it because London wants it? The Traffic Report, it is true, suggested the expenditure of public money, where necessary, in compensating a local authority for the loss of land in setting back their building lines for a main road; but it may be doubted whether compulsion will not be necessary. The only way to ensure the carrying out of a general scheme of adequate main roads is to have the roads

set out and planned by a central authority in London, and the local authority then to receive a mandate to lay out such part of each road as comes through their district, of the prescribed width, as a duty compulsory by law. The question of compensation for the compulsory taking of land could, of course, be settled by the usual methods of procedure. The object would be, not to victimise a local authority, but to compel them to fall into line in the carrying out of a central scheme.

Opening Out Southwark Cathedral.

THE idea which has been started, and to which we have already referred, of opening a cleared space between Southwark Cathedral and the river, seems to have excited great interest and to find wide approval, especially among those who are acquainted with the adjoining neighbourhood, and who wish to see an open space provided for its crowded population. That is a very important point, no doubt; but the one which we naturally think of more is to see a fine prospect added to the river bank, as a break in the rather sordid line of old warehouses, and to see a remarkable building brought more into prominence. The nave of the cathedral, of course, is modern work, by the late Sir A. Blomfield; a good example of modern Gothic, and that is about all that can be said of it. But the choir contains the finest Early English work to be seen in London, and is little known. Americans, we are told, visit it a good deal, because they find it duly described in their guide books; but Londoners, who do not use a Baedeker to their own city (some of them might learn a great deal if they did), know very little of it, and few of them ever see it. If the discussion of the subject draws more attention the choir of Southwark, it will have done something.

The Late Professor Legros.

IT is announced that an exhibition of the works left by Professor Legros is to be held shortly at the Fine Art Society's rooms in Bond Street. The works to be exhibited include, apparently, not only painting and drawings, but gold-points, crayons, and medallions and sculpture. Legros was a very versatile artist, but we were not aware before that he had included sculpture among his productions. Whatever he has left, however, will be the work of an artist of original genius, and who was always serious in his aims, and the exhibition is likely to be of considerable interest.

A New Building Estate.

IT is announced that the Wembley Hill Estate, which is the property of the Wembley Park Estate Co., has been sold to a Bedfordshire syndicate to be laid out in plots for building small houses on, to cost, with the land, £350 to £400 each. The houses are to be "ideal homes," a phrase which we suppose has become classical since the "Ideal House" Exhibition, two or three years ago. Here is an opportunity for making a new departure in building estates of this kind. At Letchworth, Hampstead, and Gidea Park, the ideal home has taken far too much the form of what we may call the artificial picturesque; the provision of houses with small windows, high roofs, and in general rather thin walls. This last named quality originated in the endeavour at Letchworth to show how large a cottage could be provided for a very limited sum of money, and cost had to be saved in the walling, so that a 14 in. outside wall became quite a phenomenon. That is not the way to build ideal homes; pretty cottages of this kind may be very charming in summer, but they will be very cold in winter. Nor is it "ideal" to build with low walls and high-pitched roofs so that nearly all the upper storey is in the roof, and the sides or angles of the rooms are too low to stand up in, by reason of the slope of the rafters. High roofs are not necessarily picturesque, except by association; old cottages had high-pitched roofs because village carpentry was not very practical; there is no common sense in repeating this method of building now, and it merely makes cold and inconvenient upper storeys. Nor is there

anything beautiful in having very small windows, which again are only picturesque by association; practically, and for modern dwellings, small windows mean deficiency of light, and are not conducive either to health or convenience. If the projectors of the new building estate will make a fresh start, and show that small houses may be made pleasing to look at, and much more comfortable to live in, without imitating ancient cottages, they will be doing a good work and setting an example which may be followed elsewhere. We have seen quite enough of the "ideal home" in its pseudo-picturesque form; we should like to see it take a more practical and reasonable aspect.

Backward By-Laws.

COMPLAINT is made that the Manchester Corporation by-laws for new buildings and improvements are, particularly as regards steel construction, a very serious handicap on development. For steel construction no detailed by-laws are laid down such as those which apply in the case of much of the brickwork and woodwork which has been steadily replaced by steel construction for many years. Architects can at once discover if their brickwork designs meet with the approval of the authorities, but neither architects nor engineers can ask for the passing of steelwork designs until after the actual material has been prepared and fixed. It would surely be fairer, a correspondent very justly remarks, to judge the suitability of a structure as it is shown on the original plans rather than later, when alterations may involve heavy expense. There is no part of a building that costs so much to modify, after once being put together, in its final intended position, as the steel-work. "Of course, there are qualified engineers at Manchester whose work the Corporation would never question, and the present practice is to their advantage and interest. But," he adds, "with the greatly increased growth of industrial Manchester it is impossible that the design of the steelwork of all structures should be in the hands of a few men. It is time that we had a department like that of the London County Council, which thoroughly investigates proposed steelwork constructions, together with the other work which comes under the by-laws to be passed with the plans. No data that can be obtained is neglected by the L.C.C. department, and there is no difficulty in getting within the scope of its clear requirements and then satisfying the engineers and so far guaranteeing the final acceptance of the work proposed, which is of the utmost importance to the architect and to the contractor." It is very refreshing to find the London County Council regarded as a model for imitation. Undoubtedly they owe this proud position to the very useful guidance they have accepted at the hands of architects and builders, and it is to be hoped that the Manchester Corporation is equally accessible to similar influence for its own good.

The Invention of Portland Cement.

IT is seldom possible to determine quite definitely who was the absolute originator of any given invention, even when the invention is comparatively modern, like that of Portland cement. Usually there are many successive steps towards perfection, and progress is assisted by a plurality of persons; and Portland cement, as we now know it, owes its perfection to the contributory suggestions of scores or hundreds of fertile brains. Recognition of this fact, however, does not greatly, if at all, discount the interest that most people take in the search for origins; the excitement being usually in the chase rather than in the capture. Apparently it is of no great practical importance to ascertain who originated Portland cement; and nevertheless it is clear that there are many who, having long supposed that Joseph Aspdin was the inventor, have had this notion disturbed by the reiterated claim that the honour belongs to Isaac Johnson (who died a few weeks ago at the age of 101), and are desirous of escaping incertitude. In another part of the present issue we print an article that may serve either to remove or only to deepen the perplexity to which

several of our correspondents have confessed; the effect depending upon individual temperament. It will be seen that Dr. Wilhelm Michaelis, the eminent chemist, having gone into the subject pretty thoroughly, does not hesitate to award the palm to Isaac Johnson. He of course admits the priority of Aspdin, whose patent was taken out in 1824, whereas Johnson seems not to have taken up the subject until the early 'forties. Johnson advances the claim, however, and Dr. Michaelis supports him in it, that although Aspdin got on to the track of a discovery, he, being no chemist, never evolved a satisfactory commercial product; and that Johnson, having an adequate knowledge of chemistry, was "the first manufacturer of a cement that would pass the test of the exacting engineers of British and foreign Governments." It is, apparently, a case of "honours divided"; and probably most people will be quite content to leave it at that, even though the evidence adduced may not be such as to satisfy the most rigorous and exacting demands for irrefragable proof.

The Temple of Apollo Palatinus.

MR. OLIFFE LEGH RICHMOND writes to correct a misapprehension which seems to have arisen with regard to his theory concerning the Palatine Hill and the group of Augustan buildings which once adorned it. He complains that his theory seems to have been confused with that of Professor Pinza; whereas in Mr. Richmond's view the Temple of Apollo and the Palatium of Augustus (a building distinct from the *domus Caesaris* or "house of Livia") faced across the Circus to "Diana of the Aventine," as Romus faced towards Remus at the taking of the first auguries. The front of these buildings, with nine arches of the Danaid portico to the east, formed the northern side of the "area" of Apollo; on the east this area was bounded by the Latin and Greek libraries, with more of the portico in front of them; on the south ran the rest of the portico as far as the Stair of Cacus, upon foundations destroyed in the great landslide. The writer says that the contention of a critic that "the main argument against the new theory is supplied by the statement of Festus that the symbolic *Roma quadrata* was situated in front of the Temple of Apollo, whereas it must certainly have lain behind the temple," entirely misrepresents the idea. The square Rome of Augustus was a plot of ground of a certain measure upon which the Temple of Apollo and the Palatium stood. Festus (and Solinus) refers to that side of the square which was marked out by *termini*, and extended from the south-eastern corner of the temple steps to the brow of the Stair of Cacus on the west of the area. This measured side of the square was thus both "in area Apollinis" and "ante templum," and Mr. Richmond claims that his theory is the first to reconcile the two authorities.

The Future of Whitehall.

THE scheme of lining Whitehall with Government buildings is likely to be advanced one step further for it is stated that in the next Session the First Commissioner of Works will ask Parliament to sanction the acquisition of land on the eastern side of Whitehall for an extension of official premises. This will involve the absorption of practically the whole of Whitehall Gardens and the buildings now occupied by the Board of Trade, the Crown Agents for the Colonies, and the Committee of Imperial Defence. Nothing has transpired as to the intentions of the Government regarding the Departments which would be transferred to the new buildings, but there is a general recognition of the advantage accruing to the public service by the concentration of the important administrative offices. There are extensions proceeding at the present time which will cost over half a million. The offices of the Local Government Board and the Board of Education are being enlarged at the bottom of Parliament Street, already a considerable part of Great George Street has been built upon, and it will not be long before the remainder of the site will be occupied by the Government offices.

WHAT IS WANTED IN THE BUILDING TRADES.—I.

"IN THE DAWN OF A PERIOD OF 'PROSPERITY.'"

THE demand for new buildings has been slack for a longer period than usual. Various causes for this are suggested, such as the unprecedented calls for capital by other industries and by foreign and Colonial peoples, and the disturbing effect of legislation affecting real estate—for example, the Small Holdings Act, the Town Planning Act, the Increment Value Duties and the valuation incidental thereto, and the National Insurance Act.

Whatever the cause, however, the worst seems past, and a better demand may soon be expected, because the large questions about to engage the attention of Parliament will relieve the building trade from further interference for a time, while the probability that plenty of capital will soon be set free for investment in real estate, the changes already in progress in ownership of land, and the activities arising out of the working of the above-named measures, are likely to stimulate building work.

In the dawn of a period of prosperity it is well to "look back at a period of adversity" and to endeavour to draw from it such lessons as may enable good use to be made of the former and wise provision prepared against the return of the latter. Let us see how the building trade has come through its period of adversity as shown by the records of bankruptcy. For the five years ending 1910 the total number of failures were as follows:—

Builders ..	2,305	with liabilities totalling	£3,048,016
Bricklayers and Plasterers, etc.	156	"	46,815
Carpenters and Joiners ..	285	"	122,418
Decorators, Painters, Plumbers, and Glaziers ..	943	"	352,518
	3,689	"	£3,569,767

When examined year by year the numbers of failures of builders were as follows:—

1906	508
1907	531
1908	505
1909	367
1910	394
	2,305

Business failures are usually the result of causes operating over a series of years, so that it is a fair inference that the whole of those 2,305 firms who failed during the five years ending 1910 were really already in financial straits in 1906, although only 508 out of 2,305 did actually fail in that year.

But the point to bear in mind is, that *actual failures only represent a part of the total suffering of and injury to the traders*, because firms in financial straits can only keep themselves afloat by turnover of business, and hence are compelled to take even unprofitable prices rather than diminish this turnover. On a falling market, therefore, the policy such firms are compelled to pursue depresses selling prices abnormally, to the great detriment of their fellow competitors.

Comparing the number of failures in the various trades, a descending scale would be headed by grocers (with about 766 failures a year) followed by builders, publicans, farmers, drapers and haberdashers, bakers, boot and shoe makers and dealers, tailors, butchers, and decorators, painters, plumbers, etc. (with about 188 failures a year). It may be noted that in all these trades the professional side of the industry is but little developed; but when we compare them with the professional workers—such as accountants, architects and surveyors, chemists and druggists, clerks

in Holy Orders, doctors and surgeons, solicitors, and engineers—and note that the highest number of cases in any of these professions did not exceed 73 during the period in question, while with two exceptions (engineers and chemists) they were well below 50, the difference seems to require explanation. Of course, something must be allowed for the smaller number of men in some of the professions, but not very much, because, although the building trade employs a large number of men, the actual firms engaged are relatively small in number. When, therefore, every allowance has been made, one cannot fail to be impressed by the fact that in a period of five years of depressed trade, which must have affected alike architects and surveyors and builders, the total number of failures among the former was 110, as against the 2,305 builders (or, if the sub-trades are included, 3,689). What can be the underlying cause? The obvious answer is difference in the relative risks. It is true the risks differ in kind, but do they differ much in effect? Architects have to obtain commissions and are unable to advertise their own merits: they have to depend upon friends or upon the public's appreciation, which is as variable as the wind. The risk of getting a footing, let alone rising, in the architectural profession is probably as great as any risk in any trade or profession. The builder's risk is of a different kind, and lies rather in the variations of demand, variations of weather, uncertainty of ground, risks arising out of labour troubles, and the like. To those accustomed to face and deal with them they are not all so formidable as they look, and the most important of them—namely, variations of demand—affects architects and builders alike. On the whole, difference of risk does not seem to account adequately for the difference in the number of failures.

A less obvious answer is want of knowledge; not so much want of ordinary education, or commercial and financial knowledge; not so much the want of it in individual cases either, for there are plenty of individual cases where such knowledge is present; but the want of a widespread prevalence of what in short may be called "professional qualifications."

The building trade is a very complex trade, involving the organising, directing, at one time or another, of 40 to 50 sub-trades, and the proper carrying out of it—at all events where large works are concerned—demands faculties of a high order and of diverse kind by the heads of firms, and in lesser degree by the staff and workmen.

Certain complaints are not uncommon in the building trade which seem to show that want of knowledge is largely responsible for its unenviable notoriety as a risky business.

The most significant of these complaints is the one, heard at every builders' gathering, of the abuse of the system of inserting in quantities provisional sums for work to be done by specialists. Complaints of disloyal and cut-throat competition are also common, and these point to want of knowledge as their real cause. Complaints by architects of insufficient technical skill on the part of workmen obviously have a similar basis. The decay of apprenticeship also may be due to a want of appreciation of the value of training, which amounts to the same thing.

When one remembers, further, the way the building trade is recruited, the slender educational and technical qualifications possessed by apprentices and journeymen, the way the ambitious journeyman blossoms into the small builder; and when we further reflect upon the *laissez-faire* way in which all this takes place, and the entire absence of any control or test of qualification at any stage of the evolution; we can hardly fail to conclude that it is highly probable that want of knowledge is at the bottom of most of the disagreements and disasters that occur in the building trades.

[A further article on this subject, containing suggestions well worthy of the serious consideration of both architects and builders, will appear next week.]

MR. CASS GILBERT AND THE WOOLWORTH BUILDING.

A BUILDING has just been commenced in New York which is of unique interest. This is the Woolworth Building, designed by Mr. Cass Gilbert.

The problems involved in the design of a "skyscraper" are obviously of very complex character from the engineering standpoint, and the architect finds a task no less easy of solution, for the simple reason that the scale on which these buildings are conceived is colossal, and one which, before the present era, found no expression in architecture. Consequently, rules and orders which proved to be satis-

expression of the conditions, on which basis has been founded the estimate of engineering structures designed with no other idea than the fulfilment of a definite practical purpose, as, for example, the design of a locomotive. But against this idea may very well be set the question as to whether every condition imposed is a legitimate or proper one, so that, however much a building might be expressive of the conditions it was intended to fulfil, the conditions themselves might be fundamentally wrong, and the solution of them correspondingly deficient. This has a very direct



MR. CASS GILBERT.

Drawn from life for "The Architects' and Builders' Journal" by H. Farini.

factory in the buildings of antiquity are wholly inapplicable to buildings of this new class. The structures to which the skyscraper is most nearly allied are the towers of the Gothic builders and the campanili of the Renaissance churches in Italy, but all these, in comparison, are such small affairs that the conditions of design become wholly different; more especially as a giant shaft of offices requires, as a first condition, abundance of windows uniform in size, which, in itself, creates a problem of fenestration that would seem to be almost impossible of satisfactory solution. It has been argued that the real test of an architectural design to be sought in the fact as to whether or not it is the true

application to the case of the "skyscraper." These huge buildings have been the outcome of two chief factors—namely, the excessive cost of building land in the centre of American cities, and the desire for advertisement on the part of the promoters of the schemes.

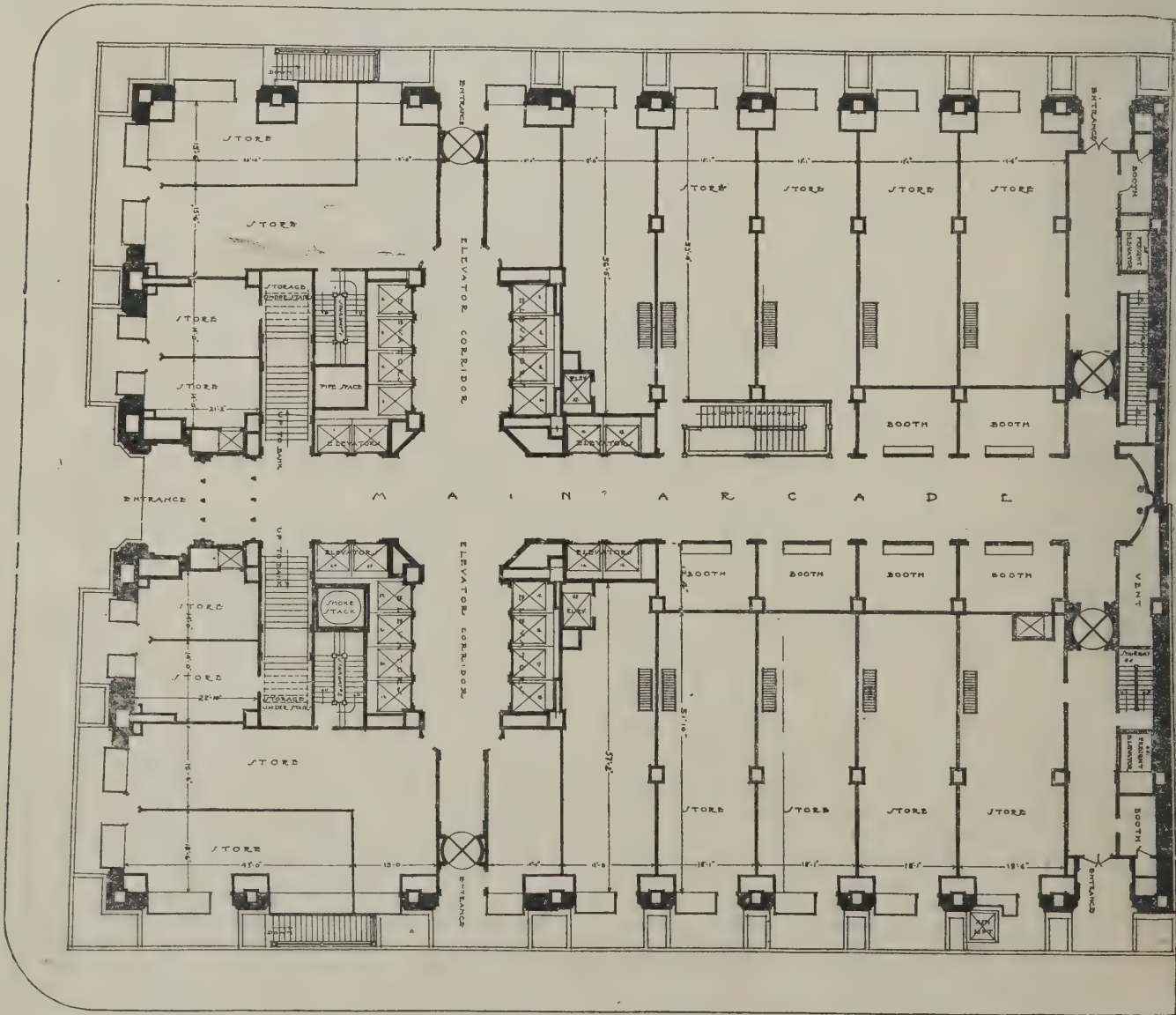
As to when the craze for height may end, it is at present impossible to say. Not so long ago a building of 20 or 30 storeys was regarded as phenomenal, but structures of such height are far exceeded by several of the new buildings in America, and in particular the advance will be marked by this amazing new Woolworth Building. Some striking figures in regard to the latter are given below, but before

proceeding to them it may be well to quote the following from an American contemporary as indicating that even in the home of the "skyscraper" there is already a protest being made against it; and if this protest were to receive the support which it undoubtedly deserves, the time might soon come when the erection of immense towers of offices such as the Woolworth Building would cease, and the buildings would be conceived on a scale more within the limits of reasonableness. Our contemporary, referring to the Woolworth Building, says: "Just why such a tall structure is considered desirable is something of a mystery, and it has manifest disadvantages to the city. The Singer and Metropolitan towers are advertisements of two of the leading advertisers of the country. There is no such excuse, however, for the rearing of this great pile, shutting off the light of its neighbours (there is no law as to ancient lights in America!), darkening the streets, and containing a population of several thousand people whose concentration on a little piece of ground will add another heavy burden to the transportation facilities in the vicinity. The construction of a lofty structure like the new municipal building to accommodate most of the city departments is a manifestly wise undertaking, for the advantages of concentrating most branches of a business under one roof are thoroughly well proved. But it is difficult to see any utility for general office purposes in such a towering structure as the new skyscraper. In these days of almost perfect telephone service, it is no longer necessary for men engaged in the same or allied pursuits to huddle together in a few congested blocks and to overcrowd the street cars and subways

serving small areas." Many of those possessing the strongest individuality are leaving the crowded down-town sections of the city for the more convenient and less congested regions about the great railroad terminals, where, even if the rush of business is just as great, there is more elbow room."

The Woolworth Building, it appears, was conceived some years ago, but the problems involved in its design were so considerable that it was only after a great amount of study that the scheme was successfully drawn out. Mr. Gilbert, the architect of the building, is one of the leading American architects of to-day, and has carried out a number of buildings possessing great architectural quality. His later work is in the same American Beaux-Arts manner that has given to the cities of the United States so many notable buildings. In the present instance, however, Mr. Gilbert has reverted to his first manner, and has designed the Woolworth Building on Gothic lines. The scheme has grown with the conception, as may be judged from the three sketches here reproduced, the final design showing a building which will be the highest in the world, the only other structure exceeding it being the Eiffel Tower.

It occupies a corner plot on Broadway, measuring 155 ft. by 200 ft. Work on the sub-structure is now in progress, the foundations having been commenced at the beginning of November last. It need hardly be said that the foundations for such a structure need to be of the greatest stability; in the present case they are carried down to solid rock, 110 ft. below the street level.



THE WOOLWORTH BUILDING, NEW YORK CITY: GROUND-FLOOR PLAN. CASS GILBERT ARCHITECT.

Sixty-nine concrete piers are being constructed by means of pneumatic caissons, these piers being loaded to a maximum of 18 tons per sq. ft. and resting on grillages which comprise principal foundation girders 8 ft. deep, 32 ft. long, and weighing 60 tons.

From the accompanying illustrations it will be seen that the building comprises a main rectangular block, from which rises a high tower crowded by a pyramidal roof, but it is only when the exact heights are set down that one gains an adequate idea of the colossal scale on which the structure is designed. Let it be stated, then, that the height from the pavement level to the top of the main roof, at 31st floor level, will be 400 ft., the tower (86 ft. by 84 ft. at its base) being an additional 270 ft. in height from the 31st floor to the 50th, from which level rises a pyramid 105 ft. high and 54 ft. square at the base, containing the five highest floors, and an observation gallery at a height of 730 ft. Thus, the building in all comprises 55 stories, of an average height of 12 ft. 6 in., the total height being 775 ft. from pavement level and 870 ft. from the foundation grillages to the top of the tower. There are only two storeys below ground, the cellar floor being 37 ft. 6 in. below street level.

As stated, the Woolworth Building will exceed in height any other structure. The nearest to it in height are the Singer Building, New York, in which the highest office floor, in the tower, is the 40th, 524 ft. above pavement level, above which is a dome rising to 668 ft.; and the Metropolitan Life Insurance Building, New York, which comprises a main block of eleven stories extending to 160 ft., with a tower of thirty-seven storeys rising another 500 ft., the total height being 683 ft.: while, as another structure of a similar character, there is now being erected, from designs

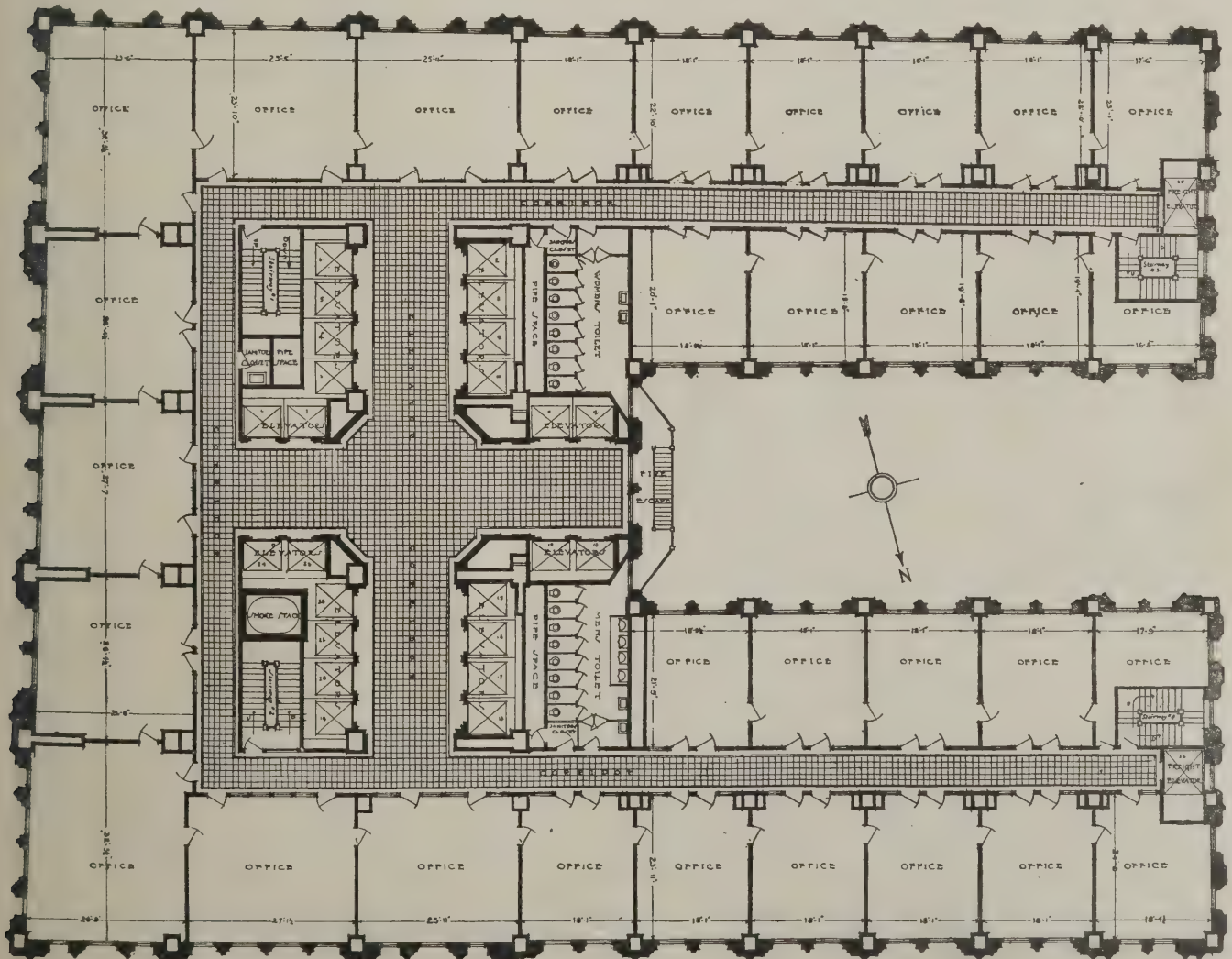
by Messrs. McKim, Mead and White, a municipal building of twenty-five storeys for the City of New York, which will be 560 ft. in height. In comparison with the foregoing, the heights of some London buildings may be given thus:—

Westminster Abbey towers	225 ft.
Imperial Institute tower	270 ft.
Westminster Cathedral tower	284 ft.
Houses of Parliament (Victoria Tower) ..	340 ft.
St. Paul's Cathedral (from pavement to top of cross)	365 ft.
the heights of the New York buildings being:—	
Municipal Building	560 ft.
Singer Building	668 ft.
Metropolitan Life Building	683 ft.
Woolworth Building	775 ft.

So that the Woolworth Building will be far and away the highest building yet undertaken. (NOTE.—The Eiffel Tower cannot fairly be taken into comparison, being an engineering *tour de force* with no interior.)

One of the most difficult considerations in connection with the Woolworth Building has been that of wind-pressure, for it need hardly be pointed out how great and how complex are the stresses set up in such a structure. A uniform wind-pressure of 30 lb. per sq. ft. over the entire building has been provided for, the stresses being met by special bracing systems. The floor loads are taken at 150 lb. per ft. super. on the ground and basement floors, and 75 lb. on each of the others.

The building will be of steel-frame construction, the outer walls being of granite up to the fifth floor and of terra-

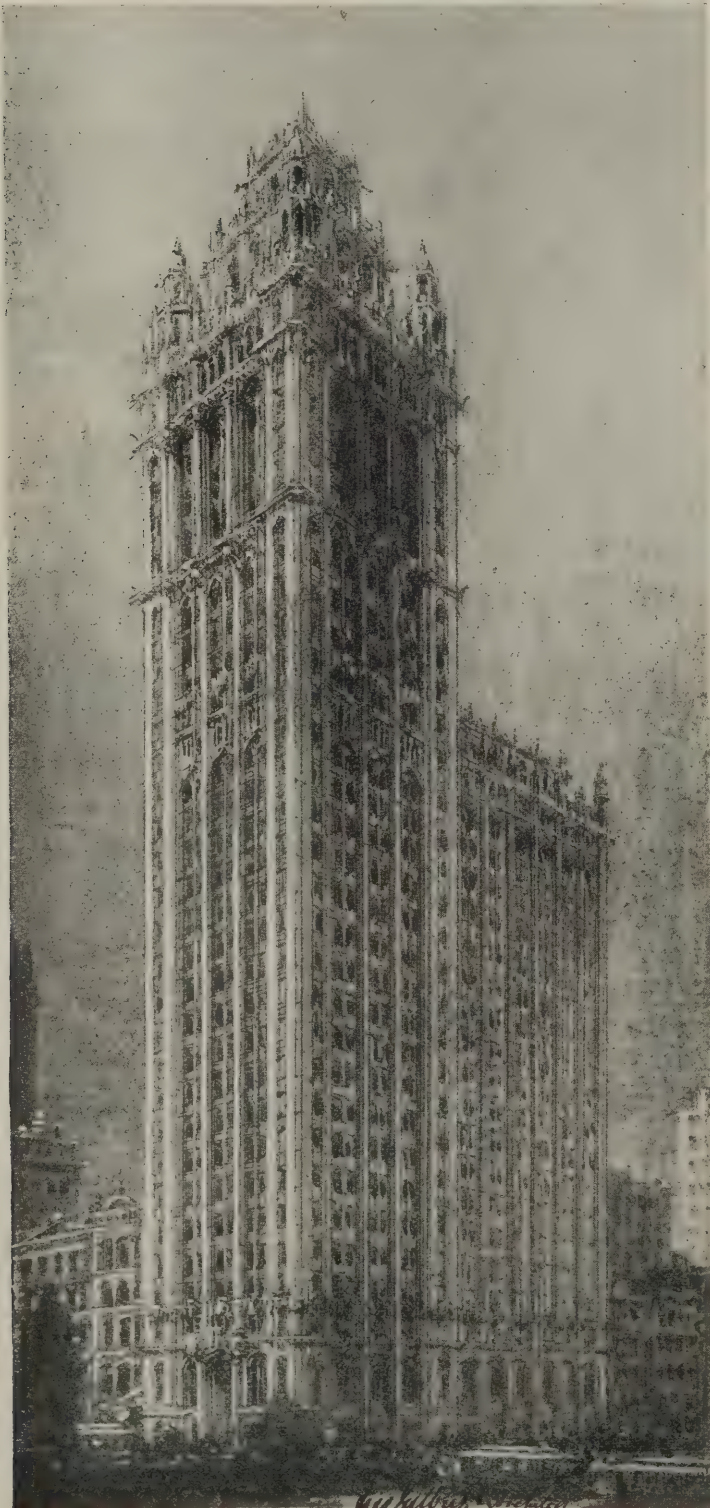


THE WOOLWORTH BUILDING, NEW YORK: TYPICAL OFFICE FLOOR PLAN.

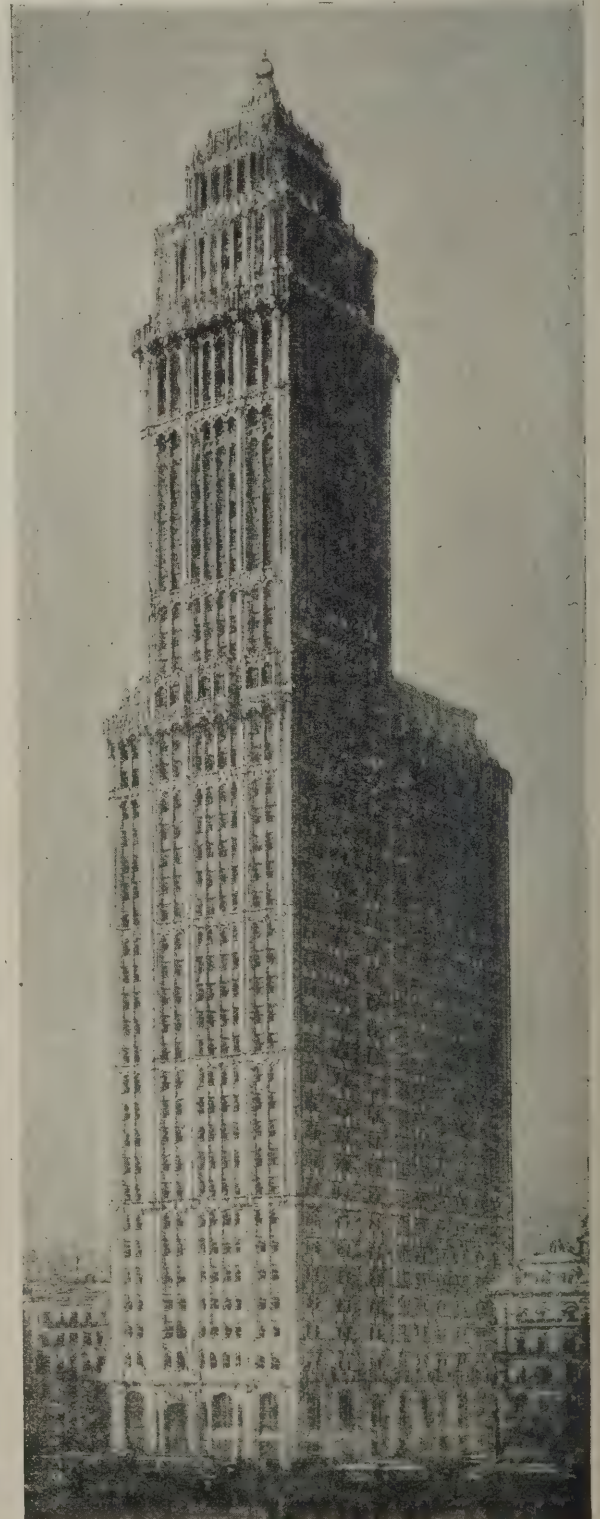
cotta above. No less than 20,000 tons of steel will be used. Partition walls will be 8 in. thick, built of hollow bricks, and floors will be of hollow terra-cotta arches, with the exception of the basement and ground floors, which will be of reinforced concrete 5 in. thick, serving as diaphragms to distribute and resist the balanced exterior horizontal pressures. The structural steel will be protected by 1 in. of cement mortar, and by having all interior spaces filled solid with concrete or mortar, and enclosed within an outer shell of terra-cotta at least 3 in. thick. Everything possible, in fact, will be done to render the building fire-resisting. No wood will be used anywhere. The window-frames and the doors will be of pressed steel, the floor surfaces of mosaic, and all exposed exterior windows glazed with wire-glass; while the pyramidal portion of the tower

will be sheathed with tiles and covered with copper. Two floor plans are here reproduced, from which the interior arrangement is best studied. It may be mentioned, however, that there will be twenty-six lifts, the shafts of which will be fireproofed, and in addition there are provided four fire-escape stairways, widely separated from one another, and each enclosed in a fire-resisting shaft.

Altogether the building is one of exceptional interest, both from the point of view of the architect and of the engineer. It is being erected for Mr. F. W. Woolworth, from designs by Mr. Cass Gilbert, the engineer responsible for the steelwork being Mr. Gunvald Aus. The general contractors are the Thomson-Starrett Company, the American Bridge Company being the contractors for the steelwork. The total cost is put at £2,000,000.



First Study.



Second Study.

THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.

BUILDERS' HOURS IN THE
MIDDLE AGES.

BY HENRY LITTLEHALES.

There is reason to suppose that builders' workmen in the Middle Ages toiled for ten hours a day, the Saturday being reckoned as a whole, not a half-day, as we may gather from the fact that an equal payment was made for each of the six working days which a workman put in when engaged at so much per day.

Our knowledge respecting builders' hours in the Middle Ages is, it must be admitted, somewhat scanty. We have very many mediæval builders' bills with the description of the work done and the amount paid in wages to each separate workman engaged, but these accounts generally give little more than these bare facts.

Two mediæval documents, however, remain to-day which refer specifically to the number of hours worked, and from these two documents we may obtain a very fair idea of the hours of the builder's working day in the Middle Ages.

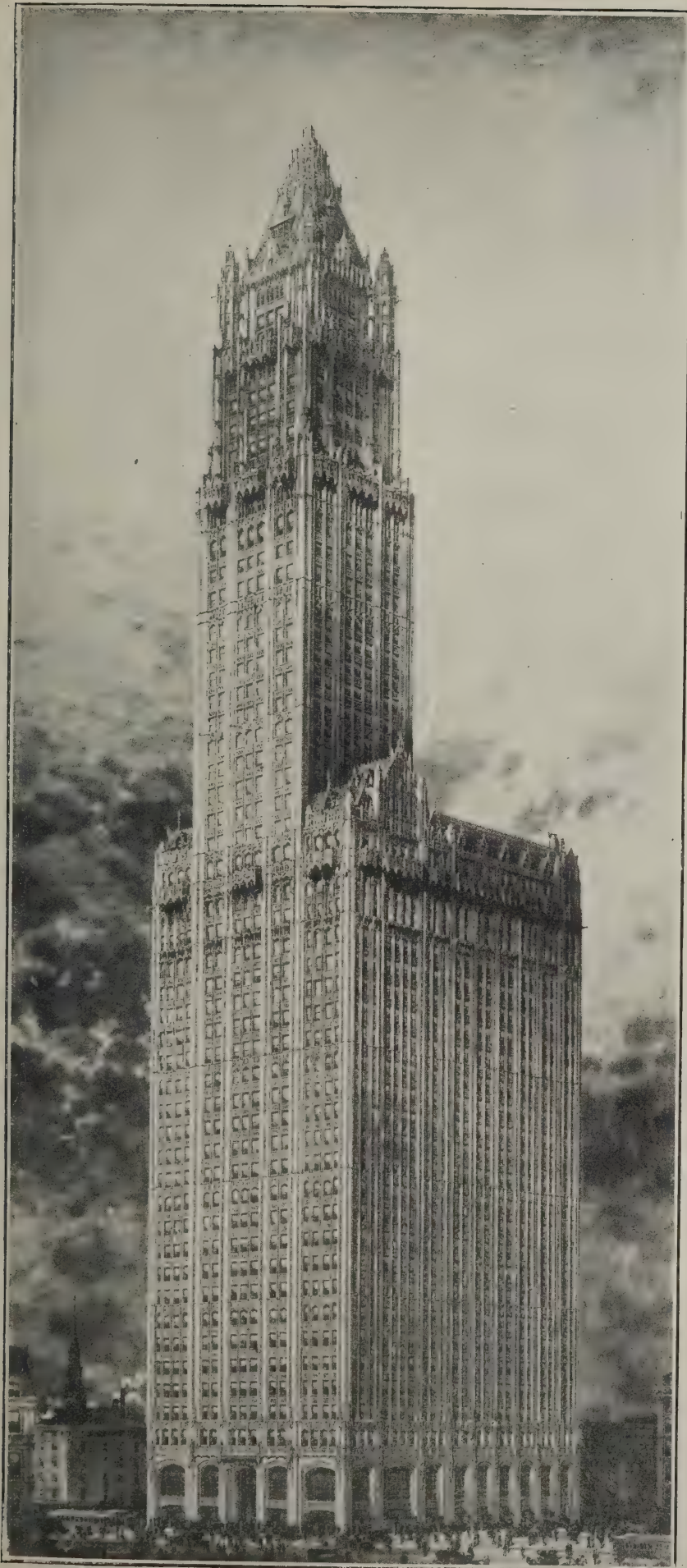
Our first document is now in the Public Record Office, labelled Exch. Acc. 477-12. This valuable manuscript is the ledger of a mediæval builder, and the items set down in the book are those connected with the erection of a substantial portion of a great house at Cuddington, not far from Epsom, in Surrey, in the year 1538.

Many details of the wages paid to the workmen will be found set down in this ledger and entered with an unusual fullness. Let us turn to the work done by the carpenters. Here we find that a large number of carpenters were engaged at wages varying in amount. Some were engaged at 8d. a day, some at 7d., 6d., and even 5d. a day. Let us take the case of John Simons, whose name is first on the list, and who is described as being engaged "at viiid. the daye." Now if we turn to an entry in another part of the book, giving the payment of his wages, we shall see that he is paid "for every x. howers viiid." Such, too, we shall find to be the case with Edmund Bedell, the first on what we may call the sevenpenny list; and so, too, is the case with William Young, engaged at 6d. a day. All these three men, with many others, were, we find, engaged at a fixed sum by "the daye" in one part of the book, and are entered in another part as being paid the same amounts respectively "for every x. howers."

The same facts also occur in the accounts of wages paid to the labourers. We find here the entry: "Labourers serving the masons, rated for every x. howers iiiiid." Of these labourers we may give the specific instance of John Wright, who was engaged by "the daye" at 4d., and whose name appears also in the list of those serving for the ten hours for 4d.

We may now turn to our second document, which is to be found amongst a series of ordinances drawn up for the town of Beverley, in Yorkshire, and which have been carefully edited by Mr. Leach under the title of "Beverley Town Documents."

On page 56 of Mr. Leach's book we find the following order fixing the working hours for builders' men in the town of Beverley in 1467: "From Easter to 15th August they shall begin work at 4 a.m. of every working day, and leave off at 7 in the evening, and during the whole season shall have at 6 a.m. an interval of a quarter of an hour for drinking, and at 8 half an hour for breakfast, at 11 an hour and a half to dine and sleep if they like, and at 3 p.m. half an hour for drinking."



Final Study.

THE WOOLWORTH BUILDING, NEW YORK.

After 15th August to Easter then next, they shall begin at the beginning of the day, and leave off when the light of the same day fails, and in this season they shall have half an hour for drinking or breakfast if they like at 9 a.m., and a whole hour at 12 to eat, and at 3 a quarter of an hour for drinking."

It will be seen by the above that the builder's day in 1467 contained 12½ working hours in the summer, and about 7 hours in the winter, an arrangement which gives an average working day through the year of about 10 hours.

From these various details we may perhaps not unfairly conclude that we have in some degree established the fact that the builder's workman in mediæval England worked a ten-hours day.

Overtime in the Middle Ages.

The references to overtime in mediæval accounts, though neither abundant nor particularly explicit, may perhaps be regarded as sufficiently numerous, and clearly enough expressed, to furnish us with a very fair idea of the system commonly in use.

A large volume of building accounts of the time of Henry VIII. in the Record Office (Exch. Acc. 477-12) refers to a number of masons: "Workyng their hower tymis and drynkyng tymis at 1d. the hower." In other words, these masons were paid at the rate of 1d. an hour to work during their hours of rest, food, and drinking.

As the mason worked generally at the rate of about 8d. a day for ten hours, it will be seen that the rate of payment for overtime was very much the same in proportion to the wage paid for ordinary work as one would expect; that is, overtime was paid for at the rate of about time and a quarter.

The "drynkyng tyme" was a recognised interval in the builder's days occupying as distinct a place as the "howers" set apart for rest and food.

In MS. 479-9 we read: "Paid the sondery masons carpynters and laborers ffor theire rewardes workinge in their howre tymes and drynkyng tymes for the expedicion of the work." This, it will be observed, states the reason for the working of overtime.

In the MS. 459-22 we read: "Laborers workyng theyr howers and drynkyng tymys at ob (that is ½d.) the howre." And in MS. 477-12 we read:—"Laborers servyng fremasons, workyng their hore tymis and drynkyng tymis, ratid for euery x howers vd." That is to say, the labourers attending the masons worked overtime for a payment of a halfpenny an hour, a very similar increase above the ordinary wage to that paid to the masons for their overtime. In MS. 459-22 we have the entry:—"Massons workyng howre tymys and dryn (kyng tymys) for the hasty expedyscyyn of certen wy(n)dows and do(ores)." This entry tells us both the reason for the overtime and also the nature of the particular work done in it.

At times the remuneration for overtime took the form of ale in place of money, but such a form of recompense was probably only given when the time worked was of little more than nominal duration. An instance of such a recompense occurs in MS. 474-7;—"Item, for Ale gyven to the plombers and others whan they wrought after there houres to helpe vp with led." Evidently the plumbers and others merely shifted some lead.

The working of overtime by plasterers is mentioned in MS. 479-11.

POCKET BOOKS AND DIARIES FOR 1912.

We have received various calendars and diaries from firms associated with the building trade.

Mr. J. Percy Day, of 3, Victoria Street, Westminster, sends us a combined blotter, calendar, and diary for 1912, attractively bound in violet cloth. Mr. Day is the London Representative of the "Austral" Window Balance Co., Ltd., of Manchester, and is also proprietor of the Euboeolith Patent Flooring.

The Saxon Portland Cement Co., Ltd., Cambridge, send a very neat little leather-covered, rounded-edged, back-looped, waistcoat-pocket diary, with insurance coupon included.—A handsome red-leather-covered, self-opening pocket diary, with rounded corners and back loop for pencil, comes from Messrs. Siemens Bros. and Co., Ltd., and Siemens Brothers Dynamo Works, Ltd., who have usefully included in it a few illustrations of some of their specialities, and of works in which they have provided installations.—The "Mechanical World" Pocket Diary and Year Book, and the Electrical Pocket Book from the same firm (Emmott and Co., Ltd., 20, Bedford Street, W.C.), are each published at sixpence net, and each is a marvel of cheapness.

From Messrs. Robt. Ingham Clark and Co., Ltd., varnish manufacturers, London (with branch factories at Paris, Hamburg, New York, Buffalo, Chicago, Sydney, and Bridgeburg), we have received a most tasteful calendar in Adam style; also a copy, specially bound in red leather, of the "British Almanac and Companion for 1912," including an insurance coupon. The latter is a volume of 446 pages, containing a well-digested mass of useful information. Seating plans of the principal London theatres, concert-halls, and music-halls are a notable feature.—"The Master Builders' Handbook and Diary for 1912," the official Year Book of the London Master Builders' Association, is now still further improved by the addition of such new features as a very useful digest of the more important law-cases, of interest to architects and builders, which have been decided during the past twelve-month. The history of the Association, the proceedings of the Conciliation Board, the lists of members of the Association, of district surveyors, of London Labour Exchanges, etc., as well as the many other items of practical information, have been revised up to date. Leading legal cases, in which important principles of the law with regard to building have been established, are included, as well as the text of the London Building Acts Amendment Acts, the R.I.B.A. Form of Contract, the agreements drawn up in connection with the various sections of operatives, and a mass of useful data with regard to the various trades. Portraits are given of Mr. G. Bird Godson, President, and Mr. Leonard Horner, Past-President, of the Association, and of Mr. J. S. Holliday, President of the Institute of Builders, and there is also a view of the Council Chamber of the Association at Koh-i-noor House, Kingsway. The volume (including diary) can be obtained, price one shilling net, from Technical Journals, Ltd., Caxton House, Westminster.

The 1912 edition of Sprague's Architects' Pocket Diary contains a new feature in the shape of a complete list of the meetings, members of council and committees, etc., of the various architectural and other societies connected with architecture and

building. The pocket-book includes its usual amount of useful memoranda as to construction and building materials, all comprised within a very small space, and of convenient size for the pocket.

CORRESPONDENCE.

The National Insurance Act.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Having read Mr. Heathcote's letter in your issue of December 30th, perhaps I may be allowed to accept what appears to me to be an opportunity of stating the case from my standpoint—that of a builder.

First of all, I do not object to State insurance. Next, I am already asked under the Workmen's Compensation Act to provide for a man during the period of his incapacitation from work as the result of an accident happening to him whilst carrying out my work. I do not take exception to that; but what I would emphasise is the fact that I am now to be called upon to pay two heavy premiums at once on behalf of a man who can only benefit as a result under the one or the other Act, and not under both.

To illustrate my meaning, let me take figures. Under the Workmen's Compensation Act I am obliged to pay a workman one-half of his average weekly earnings each week during the period of his incapacitation. Prices to-day do not allow me to run this risk. I must therefore cover myself against it, and, to this end, pay a premium of 30s. per cent. on my wages bill to some society to accept it. This means that for every £5,000 I pay in wages my premium against accident to workmen amounts to £75.

Now, take the National Insurance Act. The sum of £5,000 would enable me to employ 55 men for one year. (It is necessary to discriminate; for in the one case premiums are based on wages, and in the other on the number of men employed, and I arrive at the figure by taking the mean of the combined figures of a bricklayer and labourer as a fair average for the trade.) My contribution to the State scheme on behalf of these 55 men at 3d. per man per week would amount to £35 per annum.

Taking, then, the two together, I pay in the aggregate 9½d. per week per man, in premiums comprised as follows: State insurance 3d., and Workmen's Compensation Act, 6½d. But here is the striking part of the whole thing: the workman who is the sole *beneficiare* can only claim his benefits in proportion to and under one of these premiums, notwithstanding the fact that they *both* have to be paid.

It appears to me, then, that one of these Acts is unnecessary, since both are capable of providing very similar benefits, yet one can only be drawn on, though both have to be contributed to.

If some adjustment could be made in the relations of these two Acts, to overcome this difficulty, I personally could and would willingly pay, not only my contribution of 3d., but, in addition, that of each of my men, i.e., 4d., and at the same time save for myself 2½d., or 25 per cent. of premiums; or, on the other hand, and in the event of the continuance of the workman's contribution, increase mine, which, added to that of the State, would enable him to derive greater benefits.

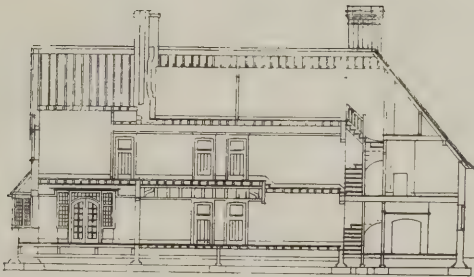
JOHN A. PETTIT

(Brand, Pettit and Co.).

South Tottenham, N.



SOUTH ELEVATION



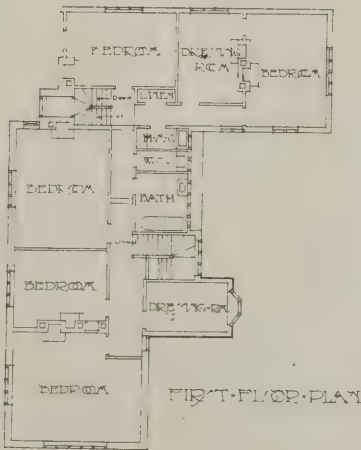
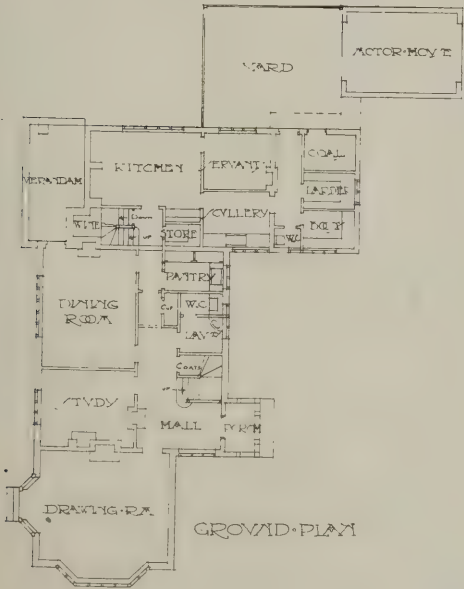
SECTION



EAST ELEVATION



NORTH ELEVATION



FIRST FLOOR PLAN



2ND FLOOR PLAN

10 0 10 20 30 40 50 FEET

"WINTERGREEN WOOD," PYRFORD, SURREY. CYRIL B. TUBBS AND A. A. MESSER, ARCHITECTS.

The exterior of this house is finished in purple stocks, and the roofs are covered with thick hand-made sand-faced tiles. The external woodwork is in deal painted white. The whole of the interior finishings are of very simple treatment, and most of the woodwork is painted dull white. The house was built by Mr. W. G. Tarrant, of Byfleet, from designs by Messrs. Cyril B. Tubbs and A. A. Messer, of Woking.

SOME UNDERLYING PRINCIPLES OF THE CLASSIC ORDERS.

WITH the exception of the Gothic, there is no period in architectural history in which the order is not one of the fundamental features. There has always been felt the necessity of support other than by the walls, and (writes Mr. Egerton Swartwout) the posts and lintels of the savage have been developed and beautified into the glorious orders of classic times.

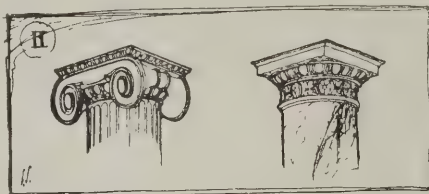
Principles Governing the Orders.

It is not the present purpose to trace this origin or development in detail, nor to attempt a modern version of Vignola, but rather to show certain principles that governed the design and the use of these orders; the function of support; the line or curve (Fig. I.) which is the logical expression of this function; the relation of various members of the entablature to each other, and to the column or pier below, and certain other relations, which, though seemingly self-evident, do not appear to have received any attention from authors. The written records of architecture in the classic ages are scanty, nor is it likely that these principles ever would have found a place in literature; they were considered fundamentals, and were handed down orally. They were part of the education of the classic architect, and were added to and corrected until the culmination of the Greek art in the fifth century. From Greece they went to Rome, weakened by the decadence of Greek art in Alexander's time, and while Rome knew them, she did not always apply them. There was great and rapid building in the Roman days, and the architects were not able to give that attention to detail that was demanded in Greece. With the decline of classic architecture, tradition ceased, and when the thread was picked up at the time of the Renaissance, some of the principles entirely escaped the measurements of the restorers who had access only to the Roman monuments. Neither Serlio, Alberti, nor the well-known architect of Vignola give any evidence of appreciation or knowledge of their existence.

Origin and Development of the Column.

The origin of the column came from the necessity of support, and the supporting material in all history, certainly as far as the architectural treatment of the orders is concerned, is lithic. The column, as we find it, is a stone form, and its development has been in that material. The development was gradual, the prototype of the Greek Doric column being in Egypt, although it found little favour with the Egyptians, perhaps on account of its inadaptability to colour decoration. From Asia came the Ionic volutes, and from these two orders the Corinthian was derived, being merely a Doric form with enriched necking of the lotus bell-shape pattern, surmounted with the Ionic volutes. But in all cases the principle was the same, the order being the logical structural development of the post and pier. The early architects had learned that if a column was smaller at the top than at the bottom it had greater stability, and a more pleasing shape, and that if chamfered or fluted it was more decorative. They laid a block on the top of column to provide more support to the beam it

carried, and it became the abacus of the Doric order; and as the transition between the beam and column was unsightly, a moulding was placed between, in the outline of a human hand supporting an overhead weight, not because it was a copy of the hand, but because it gave a pleasing and adequate line of support. The Ionic and the Corinthian orders gave a different shape to this line of support, the Corinthian being extremely logical, but the Ionic unstructural and justifying its use only by its beauty. The Greeks, indeed, seemed to consider it an inferior order for interior and decorative use, and adhered absolutely to the Doric for their great temples, except in the later period of their decadence. But, although unstructural, in the Ionic there is still the same curv-



ing outward of the supporting line in the capital. Beneath the volutes, which form merely a decorated abacus, is the same firmly projecting ovolo as in the Doric order, fulfilling the same purpose, and being such an essential part of the cap that it can never be omitted, nor should it ever be concealed by the side of the volute. (Fig. II.)

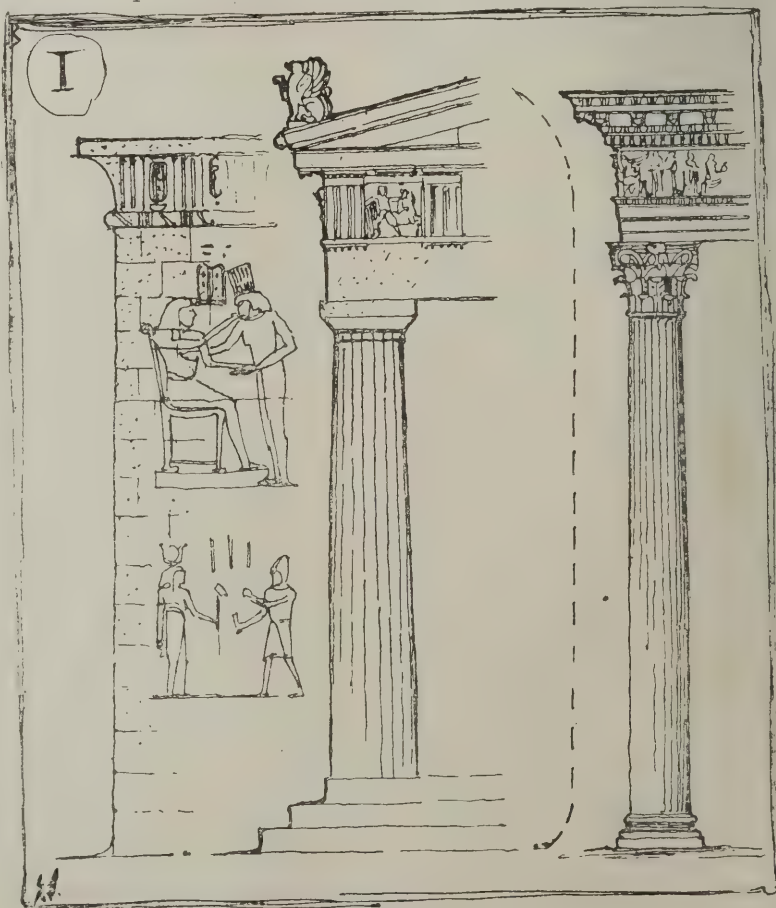
Modern Use of the Order.

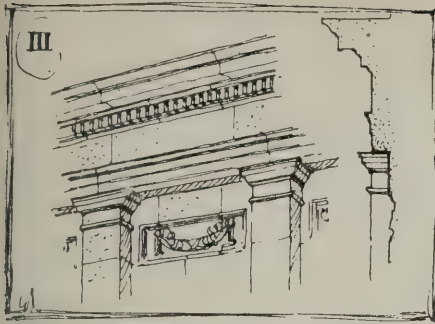
As in the classic ages the order reached its highest development, so no new

order has been invented since this time; all later orders being developments and variations, successful occasionally, but for the most part unsatisfactory. In the use of the order the usual modern method is either slavishly to copy some classic example without regard to size or location, or to follow the dictum of Vignola, or to invent some hastily studied and ill-worked-out idea, whose only merit is a radical difference from anything that has ever been done before. An order, of course, should, and does in the classic examples, vary according to material, place, and size. No two classic examples are similar, even when designed by the same architect, as may be seen in Ictinus's orders at Phigalia and in the Parthenon; and the elaborate rules of Vignola were merely the ideas of one man. To him all entablatures are one-quarter the height of the column, but in classic days they range from nearly a half at Paestum to nearly one-fifth in the temple of Jupiter Tonans at Rome. The only thing that can be said in favour of the adherence to the rules of Vignola is that the result is generally safe, and, while possibly stiff and wooden, is infinitely preferable to some of the wonderful creations of modern fancy.

The Principle of Support.

But the important feature of all orders is that they are based on the rational realisation of the principle of support. A column should appear to, as well as actually, support its entablature, and the entablature should be big enough to hold down the column. There must be a sense of balance and repose, and the support must be proportioned to the requirement. In an engaged column, for example, where the entablature counts with the building, and the order is merely applied decoration, the entablature can be smaller than that necessary for the same column when free-standing. It was early apparent to the Greeks





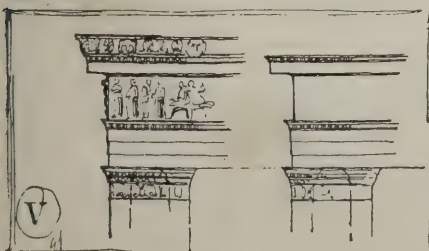
that it was not necessary for the supporting member to be the same size as the beam it supported. This was not structurally necessary, as the compressive strength of stone was greater than its tensile strength, and the introduction of the abacus and echinus rendered it unnecessary from an artistic standpoint; so the beam or architrave was then made wider than the upper column diameter, and from the top of the cap the entablature extended outward in an approximation to a curve.

A Great Principle of Design.

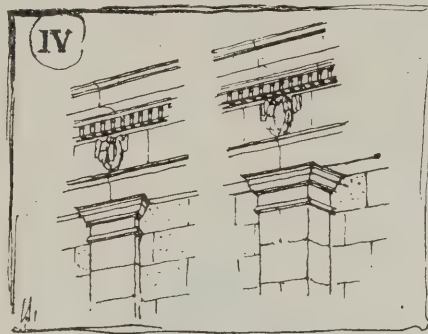
This appreciation by the Greeks of the line of support following inward the inclination of the column and then outward by the reverse curve of the echinus to the outer projection of the cornice (see Fig. I) was the great principle by which all of their designs were regulated, a principle which was overlooked in the Renaissance restorations of classic architecture and is generally unconsidered now. The Egyptians in the batter of their walls and the reverse curve of their simple crowning cornice had the same idea, and that idea is naturally inherent; a careful tracing made over a freehand sketch will invariably show the same curve unconsciously made. This curve begins with the echinus of the Doric, or with the necking of the other orders, and extends nearly continuously to the ultimate projection of the cornice,* the only break in the continuity being at the top of the cap, a break which only serves to emphasise the curve itself. This curve or graduated projection of the various faces of the entablature is more apparent in Greek than in Roman work. In the former it is invariable; in the latter it is general but not invariable, if we can trust the restorations. The Roman work has not been as carefully measured as the Greek, and the restorers have been more or less under the influence of Vignola; and as it is very difficult in many cases to tell the exact positions of the different faces from the remaining fragments, it is conceivable that they were restored as the restorers thought they ought to be. In any case, we would not expect the Romans to give as much attention to detail as the Greeks.

An Important and Little Understood Principle.

The most important and least understood principle in this great idea of the Greeks is the relation of the lower face



of the architrave to the upper diameter of the column or to the wall below. It is always in advance of it. In the Doric order so much so that it has always been recognised; the order is intolerable without it. In the early examples the architects were evidently afraid of the strength of the materials; the columns were almost clumsy, and the abaci nearly touched; the architrave stones were of great height and width; but the same general principle obtained. In the Ionic and Corinthian orders the abacus projections are not nearly as great, but the architrave still projects considerably beyond the column face. The projection of architrave beyond plane of wall or beyond anta face is not absolutely universal in Greek work; in one or two cases it is very slightly behind wall face, but these cases are few and are under the shadow of porticos, where the relation is not so apparent; and then, too, the anta cap being very small, there was little or no opportunity for the projection of architrave. In all cases on the exterior



that the author can find the projection is the invariable rule. In some cases the wall is battered and the line of support sweeps out in the reverse curve of the anta cap and the architrave above. The beam is invariably larger than either the pier below or the upper diameter of the column (Fig. VII.). This principle was thoroughly understood in Romanesque and Gothic, as well as in classic work, but was strangely lost sight of in Renaissance days. Vignola and the others, in their treatises on the orders, invariably place the lowest architrave face directly over the upper diameter of the column or over the pilaster face, and it is so usually done now. In the case of the column, the architrave, seen on the angle, projects beyond the upper diameter of the column, and unless the abacus is of great projection the curve is maintained; but in the case of pilasters the effect is most distressing. A row of pilasters seem to be supporting nothing at all, and the great projections of the caps when seen from below, are useless and uneasy, and seriously interfere with the horizontal sweep of the entablature. (Fig. III.)

Relation of Architrave to Column.

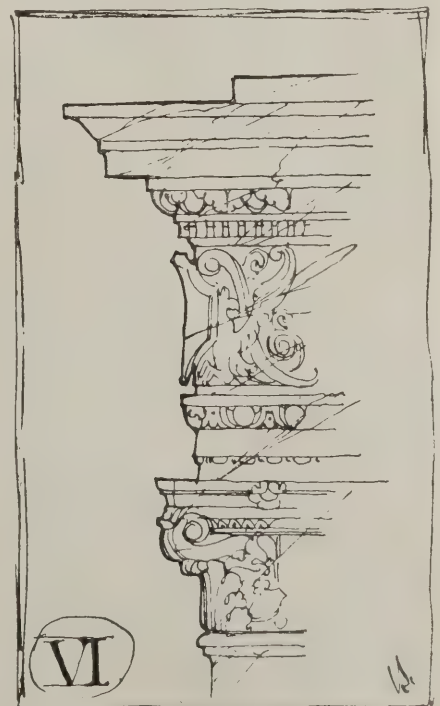
There is no rule governing this relation of architrave to column or pilaster. You cannot reduce it to modules or parts. It is as much a part of the design as the proportion of the column or the heights of the entablature. It is governed by the projection of the abacus and by the projection of the pilaster; the greater the projection of the pilaster the less need be the projection of the architrave, the reason for the latter being that when the pilaster has less projection it throws into apparently greater prominence the front portion of the cap; the side of it is scarcely seen, and the architrave face must be extended

to give this front portion of the cap something to support. (Fig. IV.)

■ All the faces of the architrave follow the general out-sweeping curve crowning the line of support. In some instances the faces are vertical and in others slightly tilted forward; in a few cases they are tilted back. But even when they are tilted back the general effect is the same on account of the projections of the faces and of the crown moulding of the architrave.

Frieze and Architrave.

The relation of the frieze to the architrave follows the same rule as that of architrave to column face. It is beyond, or has the appearance of being so. In the Grecian Doric the simplicity of the great architrave seems to unite it with the frieze more than is the case in the other orders, and the triglyphs are on the plane of the architrave face to give this feeling of unity. In a few late examples where they project beyond the architrave face the effect is not so satisfactory. The sculpture in the metopes is in high relief, and projects considerably beyond the architrave face, the outer face of the carving really forming the frieze face. Without this bold relief in the metopes the cornice is apt to look thin and of excessive projection. In Greek, Ionic, or Corinthian the frieze face always projects, that is to say, the apparent frieze face, which is the outer face of the carving; although the background of the carving is usually considerably back of the architrave. In many of the restorations the latter frieze face only is shown, giving an entirely erroneous impression of the orders and causing numberless modern buildings to present a very curious depressed appearance in the frieze. (Fig. V.) The Renaissance architects felt this frieze relation, and usually corrected it by ornamenting the frieze in high relief. In some instances the ornament was not thought sufficient, and recourse was had to corner cartouches, which effectually overcame the difficulty and produced an outline closely approximating the curve. This is very evident in the case of the entablature to the pedestal of the Coleoni statue in Venice. (Fig. VI.) Notice the close approximation to the curve and the valuable points of

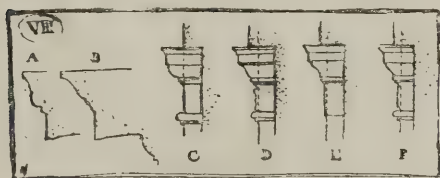




light at the top and bottom of the shield caused by the under-cutting in these places.

Corona and Fascia.

The last point affecting the line of the curve is the relation of the corona to the fascia of the cornice. This was always carefully considered in order to avoid a break in the continuity of the line, especially when seen across the corner. This break in the sweep of the curve is very apt to occur at the corner of a pediment (see AB, Fig. VIII.).



The continuity of the curve is noticeable in the anta or pilaster caps. The anta cap was entirely different in character and outline from the column cap; the projection was smaller and the line more flowing, the curve of the cap starting easily and without interruption from the anta face. (Fig. VII.) The same feeling held good in the case of pilaster caps when pilasters were used. In modern days this flowing curve of outline is usually unconsidered. In the Roman Doric order, for example, the pilaster cap is usually made similar to the column cap, and the abrupt line of the ovolo, while necessary and appropriate under the abacus of a column in a pilaster, causes an unpleasant break in the line of the curve and an undue projection of the pilaster cap. The cyma recta or reversa has a much more pleasant outline for such a position than the ovolo, although the shape of the ovolo can be softened so that it can be used. (Fig. VIII.)

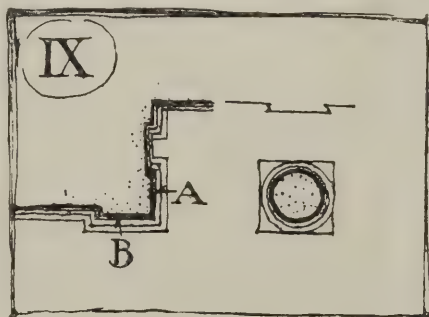
Parapet and Wall.

The relation of the parapet or balustrade to the wall below is also worthy of careful study. If elaborately moulded its relation is generally apparent, but if it is a flat surface similar to the wall it never comes directly over the wall face. If it did it would seem part of the wall instead of part of the entablature, and the entablature would seem to the eye to float. It would look as if originally it was at the top of the wall and had slipped down. This feeling would be less apparent if there was a strongly marked cap mould under the cornice, lining up with the cap of an order. In the same way none of the plain surfaces of an archivolt around a door or window should be on the same plane as the wall face adjacent, nor should the plain surfaces of an archivolt be in

the same plane as the wall face or the pier face, and the intrados should be slightly projected beyond the jamb line below.

Centre of Column and Wall Face.

The relation of the centre of a column to the wall face, if it is in antis, is governed solely by the relation of the lower architrave face to the upper diameter of the column, the position of the architrave face being fixed by its relation to the anta cap and to the wall face. If the column is in antis this is easily established, except that sometimes the different projections of the base require delicate adjustment; but where a pilaster occurs, either behind or at the side of the column, the relation is much more complicated. If the pilaster is made the width of the top diameter it is apt to look too thin and slender for the column proportion, and if made the mean width of the column, the pilaster will be wider than the beam it supports. In the location shown in Fig. IX, this difficulty can be overcome by making face A of the pilaster the right width to receive properly the beam overhead and face B slightly wider, so that seen from the front the pilaster will be of proper proportion. Of course, this would be



impossible were the pilaster fluted. In all cases there seems to be no rule. It is a question of design, and varies with the projection and character of the caps.

In fact, in the application of all the principles above described there is no definite rule. The conditions vary, and the design varies; and when once the principles are understood the application becomes at once a matter of taste and study; such study as can be made by careful drawings supplemented wherever possible by large scale models. But in all cases it must be remembered that these variations from what are usually considered the normal relations are very slight. It is like the entasis of a column, very beautiful and appropriate when properly done, giving unperceived a wonderful grace and charm to the shaft, but becoming silly and unmeaning when so apparent that it is readily noticeable.

LONDON'S NEW SCALE

In the streets of the town the point that becomes more emphatic every year is the tremendous increase of scale in our buildings. Anyone can see now that the twentieth century is being marked off quite distinctly from the preceding century. For this, it may be remarked in passing, Mr. Norman Shaw is mainly responsible, but although his Piccadilly Hotel—the most metropolitan thing in London—is the great example, Selfridge's Stores underlined the movement, which has gone steadily on. Basement storeys are roughly rusticated as though hewn from solid rock, or built of large stones clearly articulated; gigantic screens of pillars are connected by constructions of metal, or the windows of two floors are treated as one, giving the effect of huge voids; cornices are exaggerated to mask the small attic storeys; an extraordinary ingenuity is shown to make people look small and buildings big. This, in the opinion of a writer in the "Manchester Guardian," is all for the good—for the main thing about bad buildings is that they have no scale—so long as the grand scale is not used in our narrow city lanes.

In a great thoroughfare like Kingsway Mr. B. Crewe's Hammerstein's Opera House is in its right place, and the lower part, with its powerful effect of rough-hewn blocks like those of the Strozzi Palace, and its small square doors and windows, is very impressive.

At a distance a striking assembly of stone, and at night, when its torches are burning bright, it has a big air of Balzacian romance. Higher up Kingsway on the other side is the little Holy Trinity Church, designed by Messrs. Belcher and Joass. It stands back from the street, forming a curved recess with a door in the centre approached by a semi-circular portico supported by columns. There are two side doors with niches with a decoration of angels in shallow relief. The building is small, but the strong square treatment and the proportion of the parts give a remarkable impression of magnitude. In the same street Messrs. Burnet's Kodak House carries the gigantic screen system a step further, the entire façade being composed of six stone pillars on a two-storey base, united at the top by a heavy cornice, and enclosing five storeys of metal construction.

The best building of the year in London is, the writer in the "Manchester Guardian" thinks, Messrs. Belcher and Joass's Hall of the Royal Society of Medicine in Henrietta Street, near Cavendish Square. The Greek revival that is so strong in Liverpool is clearly making itself felt here, and this bold and refined example stands by itself among our modern work. The effect of the high lower storey is increased by a base of grey granite blocks. The massive doorway shows a lion's head on each side, each holding a massive bay wreath ready to drop on some distinguished doctor's head. The centre part, which slightly projects, as a row of fluted Doric columns, and the windows here in its two storeys are enclosed in a panel, giving the effect of one void. The main decoration is in simple shapes kept flat, suggesting the odd inspiration of a veteran's war medal with four clasps.

Our contemporary further expresses the opinion that the best buildings of the year count among the most notable buildings in London, while the average work stands much higher in conception and detail than that of ten years ago.





CHURCH OF ST. SAVIOUR, LEWISHAM, LONDON, S.E. KELLY AND DICKIE, ARCHITECTS.

COMPETITIONS.

The Swiss National Monument.

A national monument is to be erected by the Swiss. This monument is not to be in Berne, the political capital, but at Schwyz, from which the names of the country and its people (Schweiz, Schweizer) have been taken. The old picturesque town is about 22 miles from Lucerne. A competition (limited to five) was held for the design, and that submitted by E. Zimmermann has been selected. The design provides for a large open space in the foreground (to be used for public festivals), surrounded by rows of trees and adorned with 22 statues. Behind it, on a terrace, a great statue of Liberty is to rise, and behind the statue a building of considerable breadth, but not very high. The wings of the main building will bear bas-reliefs, illustrating the decisive battles of the Swiss wars of Independence—Morgarten and Sempach. The interior will contain spacious halls with niches for sculptures. The mural paintings and those of the ceilings will represent scenes from Swiss history and episodes in Swiss civilisation, while the sculptures in the niches and along the corridors are to be busts and statues of great Swiss men. It is hoped that the main portion will be completed by November 15th, 1915, the 600th anniversary of the battle of Morgarten, but the interior decorations and the statues may not be completed for many years to come.

The Scottish National Memorial to the late King Edward.

A correspondent of the "Scotsman" writes to the effect that since the statement that seven architects had been selected to send in competitive designs for the above, he has been surprised at the apathy shown by the public as to the whole scheme. He adds that the younger members of the architectural profession and young sculptors are sadly put out at such a decision. A competition of this nature is not like one for a public building, when very often the victory is to the strong in staff and to the amount of money spent in getting up showy perspective drawings. In spite of these facts, many of the large open competitions have been won single-handed. Take for instance the recent London County Council Hall competition, won by an outsider, a young man of twenty-nine, and his designs selected by three well-known architects. The correspondent urges that, upon this and several other grounds, this competition ought to be thrown open. If any restriction is made, he says, let the designs be confined to Scottish competitors. He mentions, however, "that the London Memorial is being carried out by a Scottish-Australian sculptor, Bertram Mackennal, along with an English architect—a happy combination of talent."

LIST OF COMPETITIONS OPEN.

JANUARY 29TH, 1912. GOVERNMENT PALACE, MONTEVIDEO.—Designs are invited for a Government Palace and a town improvement scheme. Premiums: For the former, £2,125 and £850; for the latter, £1,060, £640, and £425. Conditions, etc., at the Board of Trade, 73, Basinghall Street, E.C.

JANUARY 31ST, 1912. FEDERAL CAPITAL CITY, AUSTRALIA.—Competitive designs are invited by the Commonwealth of Australia for the laying-out of the Federal

Capital City. Premiums are offered as follows: 1st, £1,750; 2nd, £750; 3rd, £500. Conditions, together with particulars, plans, and instructions, may be obtained at the office of the High Commissioner for Australia, London. Designs must be delivered by January 31st, 1912, to King O'Malley, Minister of State for Home Affairs, Commonwealth of Australia.

[The Institute of Architects of New South Wales and the R.I.B.A. have asked members and Licentiatees not to take part in this competition unless the conditions are made more satisfactory. See our issue for November 8th, p. 485, and article printed in the issue of November 22nd, p. 537.]

FEBRUARY 3RD, 1912. NURSES' HOME, BOLTON INFIRMARY.—Premiums, £30, £20, and £10. Mr. John B. Gass, F.R.I.B.A., has been appointed the assessor.

FEBRUARY 15TH.—NEW PARLIAMENT BUILDINGS, WINNIPEG.—Regulations governing the competition for the new Parliament buildings for the City of Winnipeg may be had from the High Commissioner for Canada, 17, Victoria Street, Westminster.

FEBRUARY 17TH, 1912. NEW OFFICES FOR THE PORT OF LONDON.—The Port of London Authority invite preliminary sketch designs for new head offices in Trinity Square, and for lay-out of a building site. Sir Aston Webb, R.A., is the assessor.

FEBRUARY 17TH. ELEMENTARY SCHOOL, YORK.—The City of York Education Committee invite competitive designs for a public elementary school to be built in Camphesdon Lane, Bishopsthorpe Road. Assessors, Messrs. T. Mellard Reade and Son, Liverpool. Apply, J. H. Mason, secretary, Education Offices, Gifford Street, York.

MARCH 15TH. LAYING OUT ESTATE, PRESTATYN.—Designs for laying-out the Prestatyn Estate are invited. Premiums of £50, £30, and £20. Application (with 19s. 6d. deposit, returnable) was to be sent by January 8th to Lord Aberconway and the Trustees of the Prestatyn Estate, 33, Henrietta Street, Strand, W.C. Designs by March 15th. Judge, Mr. H. V. Lanchester, F.R.I.B.A.

MARCH 16TH. PUBLIC OFFICES, HARROW.—Harrow-on-the-Hill Urban District Council invite designs for enlargement and alterations of their public offices, at a cost not to exceed £4,500. Premiums, thirty, twenty, and fifteen guineas. Plan and instructions (£1, returnable) from Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, Council Offices, Harrow-on-the-Hill. R.I.B.A. will be asked to appoint an assessor.

JULY 1ST, 1912. CITY EXTENSION SCHEME, DUSSELDORF.—Premiums £1,000 and £375. Particulars from the Chief Burgomaster, Dusseldorf.

No date. HOUSING SCHEME, SADDLEWORTH.—The council invite architects to submit designs for houses suitable for the working classes, to be built of stone and in blocks of not more than six, on certain plots of land which have been selected in the district of Saddleworth. The Council will make the following awards: For the first selected designs £25, second £10, third £5. Descriptions of the houses and other information may be obtained on application to E. Rowbotham, Clerk to the Saddleworth Urban District Council, Uppermill, near Oldham.

NEWS ITEMS.

The Licentiateeship.

We are desired to mention that it is absolutely necessary that all applications for election to the class of Licentiatees be in the hands of the Secretary of the Royal Institute by the 30th April, 1912. No further election to the Licentiateeship can take place after June next, but, as it takes some time to examine the applications, it is essential that all the papers be sent in by the 30th April at the very latest.

Partnership Change.

Messrs. Geo. Elkington and Son (George Elkington, F.R.I.B.A., and G. Leonard Elkington, A.R.I.B.A.), architects and surveyors, Norfolk House, 7, Laurence Pountney Hill, Cannon Street, London E.C., announce that they have taken Mr. Hylton B. Elkington, younger son of their senior partner, into partnership as from January 1st, 1912. He is an Associate of the Royal Institute of British Architects, and has for several years held a leading position in the firm's office. The present title of the firm, Geo. Elkington and Son, which has been in use since 1875, will remain unaltered.

Regulation of Stoneware Prices.

A representative of the Association of Stone Ware Manufacturers is reported to have stated to a newspaper representative that it had been rumoured that there had been a combine of the stoneware manufacturers of the kingdom, but this was incorrect. All that had been done by the manufacturers was to enter into an arrangement to do away with undercutting in prices and to regulate the output. The movement in favour of this arrangement had, he said, been under consideration for a considerable time, and it would be no surprise to the building trade. The increase in prices did not apply to the brick trade, but only to pipes and drainage requisites.

Bournemouth Pier Pavilion Scheme.

The Bournemouth County Borough Council gave instructions last week for the preparation of a scheme to provide a pier pavilion at a cost not exceeding £60,000. The site is that of the Belle Vue Hotel, acquired some years ago for this purpose. The previous pavilion scheme, costing £70,000, met with objection at the Local Government Board on account of licensed premises on the ground floor being open to the public without charge for admission. It is proposed in the revived scheme not to abandon the licensing arrangements in the lower part of the building, but to promote a Bill in Parliament to overcome the objection of the Local Government Board.

OUR PLATE.

Roman Catholic Church of St. Saviour, Lewisham, S.E.

This church has a seating capacity for 300, with a choir gallery at the west end. The interior is built in keyed Flettons, and is white-washed. The church has a ceiling of barrel form in six bays, carried on Doric columns of Nailsworth stone. The west front and returns are faced with Dutch bricks and tile bands. The gable projections are of oak, and the roof is of slate. The cost of the church has been £2,400. Messrs. Kelly and Dickie, of London, W., were the architects, and Messrs. F. J. Bradford, of Leicester, the general contractors.

THE CARE OF BOILERS.

THE Factory and Workshop Act, 1901, contains provisions as to the use, maintenance, and periodical examination of boilers used for generating steam in factories and workshops, etc. Buildings in course of construction are included in the category, and altogether the subject is one in which builders may be assumed to take considerable interest. A "Memorandum on Steam Boilers," which has been prepared by Mr. William Buchan, one of H.M. Inspectors of Factories, and published, price 1s. 3d., by H.M. Stationery Office (Wyman and Sons, Ltd., Fetter Lane, E.C.), contains useful observations on causes and prevention of explosions and accidents, dangers peculiar to particular types of land boilers, dangers peculiar to boiler mountings, etc., and dangers peculiar to other appliances, with remarks on responsibility and inspection. There is also a series of seventeen plates, many of which afford useful indications of various defects and dangers of construction or arrangement. The section on the causes and prevention of explosions and accidents may be usefully reproduced.

With regard to boiler explosions generally, Mr. Buchan points out that figures for recent years compare favourably with those for earlier years, notwithstanding the higher pressures at which boilers are now worked, and indicate the beneficial effect of legislation in directing increased attention to the maintenance and examination of steam boilers.

Causes and Prevention of Explosions and Accidents.

The principal causes of explosions are (1) deterioration or corrosion; (2) ignorance or neglect of attendants; (3) water-hammer action; (4) undue working pressure; (5) defective design; (6) defective workmanship; (7) defective material. Deterioration and corrosion cover such causes as: (a) ordinary wear and tear; (b) fatigue of material, caused by constant straining; (c) internal corrosion, due to acidity and other conditions of the feed water; the plates may be evenly reduced throughout, or they may be thinned in parts and unaltered at others, but the commonest form is pitting; (d) grooving due to varying pressures and unequal expansion of the various parts; (e) external corrosion, caused by leakage at seams, faulty connections, or damp brickwork; and (f) overheating, due to scale deposit, grease, or shortness of water.

Wear and tear and fatigue of material can only be provided for by reducing gradually the working pressure of the boiler under expert advice.

Internal Corrosion.

Internal corrosion is sometimes prevented by placing a piece of zinc within the boiler, attached to the affected part, but more often the addition of soda to the feed water is found useful to neutralise acidity of the water; care should be taken, however, not to add too much soda, as corrosion of the brass fittings and foaming or priming—that is, the forcing up of water into the steam space—may result. Other antidotes for internal corrosion are available, but as so much depends on the precise character of the feed water they should only be used on the advice of an expert after an analysis of the water. Some forms of internal

corrosion are slow to yield to any treatment; it is then desirable, if possible, to change the feed water; but if this cannot be done, reliance must be placed upon frequent and careful expert examination of the boiler, and prompt repair or renewal where necessary.

Boilers when not in use are frequently preserved by filling them with water to which a little common soda has been added; this is quite a good practice if there is no fear of the water freezing, and if the water is not of an acid or a corrosive character. Otherwise it is advisable, after cleaning the boiler internally, to keep it dry, by closing it so as to exclude air, and by placing in it trays of quicklime to absorb moisture, the lime being renewed when it becomes slaked.

Grooving.

As grooving is due to the movement of the plates during expansion and contraction, it is important, should this trouble be present, to avoid unnecessary variations in temperature and pressure; the firing should not be forced, and the boiler should be worked under conditions as even as possible. When it does exist, further development must be carefully watched, and repairs executed before danger arises; and if the feed water is corrosive, steps should be taken to neutralise it, as grooving combined with corrosion leads to rapid deterioration.

External Corrosion.

External corrosion, probably the most common form of boiler deterioration, can always be prevented by removing the cause. The entire exterior of the boiler should be kept perfectly dry, leaky seams and faulty connections should be attended to at once, while the boiler covering should be removed periodically and the seating and flue covers should at least be "ploughed"—that is, removed at the seams—from time to time to ensure that no wasting is going on. Neglect of this precaution has been a fruitful source of fatalities. A boiler should be placed, if possible, above the ground and under cover; a damp situation should be avoided, but if this is inevitable a concrete foundation of sufficient thickness should be used.

When serious wasting is discovered, arising from any cause, the plates should be drilled at the affected parts to ascertain the exact thickness; but before measuring them, the burr left by drilling should be removed, or the plate gauged by an approved thickness finder.

Overheating Due to Scale and Sediment.

Feed water often contains solid matter in solution (hard water*) or suspension. As evaporation proceeds, solid matter in solution is deposited as a fine precipitate which, under certain conditions, forms a hard scale or crust. Sea water acts in the same way, leaving a deposit of salt.

* There are two forms of the soap-destroying power known as hardness—(1) temporary hardness, due to the presence of calcium and magnesium carbonates, which are soluble in water containing carbonic acid, and (2) permanent hardness, due to the presence of calcium and magnesium sulphates or other salts soluble in water, irrespectively of the presence of carbonic acid. Temporary hardness cannot be removed by boiling; the carbonic acid is driven off and the carbonates, no longer soluble, are precipitated. Permanent hardness cannot be removed by boiling; the salts are not thrown down, but as evaporation proceeds the solution becomes more and more concentrated until finally saturation is reached and the salts are deposited.

If the feed water is sedimentary—that is, contains solids in suspension—there will be a deposit of mud within the boiler. It is most important to prevent any accumulation, and the remedies may be classified as follows: (1) substitution of a pure water supply; (2) treatment at the boiler; and (3) removal of all scale-forming constituents from the feed water before it enters the boiler. The first remedy, although effectual, is not always practicable, and the second class covers such methods as (a) the systematic cleaning of the boiler and removal of scale; (b) blowing off regularly when the boiler is at work to carry away the deposit and keep the density† below $\frac{2}{3}$, and (c) the addition of a suitable solvent which prevents the deposit forming a hard incrustation. Before using any boiler composition it is expedient to have the water analysed and to settle the routine under expert advice, as a composition suitable with one kind of feed water may be useless with another, and it should be remembered that the use of such composition does not remove the necessity for systematic cleaning.

The most satisfactory way to deal with scale-forming constituents in feed water is to effect their removal before the water enters the boiler. Sediment may be removed by allowing the feed water to settle in ponds or by filtration, while hard waters may be treated by one of the many efficient water-softening plants‡ in the market, and if temporary hardness only has to be dealt with, a considerable portion of the scale may be removed by using one or other of the satisfactory feed-water heaters now obtainable. The use of feed-water heaters and water-softening plants is gradually extending, as they effect considerable economy by increasing the efficiency of the boilers and reducing the work of scaling, and incidentally lessen the risk of explosion from overheating.

A definite interval cannot be fixed for cleaning and scaling boilers, as so much depends on circumstances. For each boiler this interval should be fixed by experience, and the best guide is probably the thickness of deposit, which should not be allowed to exceed a sixteenth of an inch on the main heat-absorbing surfaces; particular attention should consequently be given to the removal of scale from parts exposed to high temperatures—for instance, furnace and firebox crowns and tubes of multi-tubular and water-tube boilers. These tubes can be kept clean by the use of brushes or tube scrapers of various types, and if it should happen that the deposit is hard, turbine cleaners can be applied. The latter are operated by water, steam, or compressed air, supplied by a hose, and the rapid succession of blows by the vibrator or milled cutter knocks the scale from the tubes, leaving them practically clean.

† The density should be regularly ascertained by drawing a small quantity of water from the boiler at a special tap or at the gauge glass drain cock, taking care that the steam cock is closed, and placing in the water a salinometer or hydrometer which consists of a bulb of glass or metal having a graduated stem on the top and a stem below filled with mercury to make it float upright.

‡ In a recent instance the feed water of a certain boiler had 22 degrees of hardness (i.e., parts of carbonate of lime per 10,000) and much trouble was experienced by the deposit of a thick, hard scale after the boiler had been working a month. Since the introduction of a water-softening plant the hardness has been reduced to four degrees and the scale to a deposit of a friable nature barely one-sixteenth of an inch in thickness; the remaining four degrees are not dealt with, as the addition of more soda would introduce trouble in other directions.

As nearly all the explosions of water-tube boilers occur at the tubes it is most important that they be kept clean. Recommendations regarding the cleaning of these tubes will be found on pages 13 and 14 of the Memorandum, under water-tube boilers.

Overheating through Grease.

When exhaust steam is passed into the feed water to heat it, or the oily water of condensation from a condensing engine is used as feed water, grease will be present in the boiler, and as it becomes concentrated on the surface of the flues or tubes, will not only reduce the efficiency of the boiler, but be a positive source of danger, as it may lead to serious overheating and subsequent collapse of furnace crowns or tubes. "A film of grease one-hundredth of an inch thick offers resistance to the passage of heat equal to a steel plate ten inches thick. In other words, grease offers a thousand times the resistance of steel to the passage of heat." If it were only realised that the apparently harmless film of oil offered as much resistance to the passage of heat as a thick deposit of hard scale, more care would be taken to eliminate it. If oil is present in the feed water much of it exists in an emulsified condition—that is, in the form of minute suspended globules. The principal methods now in use for the removal of grease are:—

Filtration of feed water. Whether gravitation or pressure filters are used the feed water passes through some filtering medium such as canvas or sand. In land boilers this system is not advisable, as a rule, except as an auxiliary to other methods (mentioned below), as the filters only remove the bulk of the oil, but not the finest particles of it.

Separation of grease from the exhaust steam before the steam enters the condenser or heater. A grease separator consists of a metal chamber with a number of baffle plates inside. Owing to the large volume of the separator and the presence of the baffle plates, the velocity of the exhaust steam is reduced, and consequently, the bulk of the oil is thrown down. This method gives better results with non-condensing engines than with condensing engines; results are often unsatisfactory with the latter because of the great velocity of the steam as it passes through the separator.

Chemical treatment of the greasy water and subsequent filtration. The feed water is automatically treated with correct proportions of suitable reagents which collect the minute globules in a form suitable for removal by filters of wood fibre or sand.

Electrical treatment of the greasy water and subsequent filtration. The water is allowed to collect in a vat. The passage of an electrical current through the water, by means of metal plates, causes the minute globules to coalesce, and in this form the oil can be efficiently removed by sand filters.

If it is desired to heat the feed water by exhaust steam from which the grease has not been removed, the steam should be conveyed in coils of pipes, and should not upon any account be brought into direct contact with the feed water. Where condensers are used, very satisfactory results can be obtained by combining a grease separator (placed between

the engine and the condenser) with a good chemical or electrical method and subsequent filtration.

Overheating through Shortness of Water.

This has been a fruitful source of explosions. Shortness of water may arise from neglect of the attendant, failure of the water supply, absence or defect of water gauges, feed check valves becoming defective, blow-off cocks leaking, or the boiler may begin unexpectedly to prime. Certain defects of fittings lead to shortness of water, and necessitate such precautions as the provision of fusible plugs and low-water alarms. As shortness of water may arise from so many causes, the attendant should not depend too much on routine in feeding the boiler. He should watch the water level very closely, and should keep the water gauges in order, testing them several times daily. Before firing in the morning, he should invariably see that there is sufficient water in the boiler, and should never depend on the fact that there was plenty the night before.

Definite directions cannot be given as to the best course to follow when a boiler is found to be short of water, as circumstances vary so much, and it is a subject on which there is considerable divergence of opinion. Generally speaking, for ordinary boilers the fire should be immediately smothered with damp ashes, sand, earth, or even small fuel, the damper closed, and the fire door left open to allow the furnace crown to cool, whilst the pressure should be gradually relieved by keeping the engine running, if already in motion, or by carefully easing the safety valve, or by opening either the test tap, if any, or the top and drain taps of the glass water gauge. Some authorities recommend turning on the feed water; though accidents have probably occurred in this way, the practice may be allowed under certain conditions—for example, if the fire cannot be damped down, or there is reason to believe that very little of the furnace-crown is bare, or if the feed pipe extends behind the firebridge. For water-tube boilers, the following suggestions are generally practicable:—

- (1) Where there is no leakage and no sign of overheating, the feed should be started, the dampers closed, and the fire doors left open;
- (2) if the tubes are red or there is leakage, the damper should be closed, damp ashes thrown on the fire, the fire doors left open, and the safety valve eased;
- (3) if there is considerable leakage from the tubes the fire doors should be closed, as there is risk in standing in front of the fires, and the damper should be shut and the safety valve eased.

In nearly all cases, drawing the fire is attended with danger, as the increase of temperature which accompanies the operation may be sufficient to turn the scale and bring about a serious collapse, besides necessitating the presence of the fireman in the danger zone. The foregoing suggestions are made for a crisis which, with careful attention, should never arise, and much must always be left at the time to the discretion of the fireman, who should be prepared beforehand, by study of the instructions issued by the Insurance Companies, to act promptly in such emergency. A boiler that has been short of water should not be used again until it has been examined by an expert and any necessary repairs executed.

Ignorance or Neglect of Attendant.

A comparatively small proportion of the recorded explosions (about 14 per cent.) has been due to ignorance or neglect on the part of attendants. These have arisen from such causes as shortness of water, due to inattention to water gauges, feed valves, or blow-off cocks; overpressure, due to neglect of pressure gauges or alteration of safety-valve loads; or overheating, due to deposit through insufficient use of blow-off cocks or neglect to keep the boiler clean. In some cases, unreasonable demands are made upon boiler attendants—for example, a disastrous explosion occurred through the neglect of an attendant who had been on duty thirty-five hours. A person, however competent, could not be alert, either in mind or body, after such a spell of duty. Again, boiler attendants are sometimes entrusted with the execution of repairs, a practice to be deprecated, but the Board of Trade Reports shows that some very serious explosions would have been prevented if the attendants had, in addition to the performing of their duties of feeding, firing, and cleaning, been taught to take intelligent care of the boilers under their charge, been given precise instructions in these and necessary points, and been encouraged to direct immediate attention to any defects coming under their notice before they became dangerous.

When a boiler (one of a range) is at rest, attendants should be particularly careful not to tamper with valves, as they endanger persons cleaning or executing repairs, if steam or water is allowed to enter from some of the other boilers. It is good practice to hang a conspicuous notice on any valves or dampers that have not to be opened, or to secure them with a chain and padlock. When gas-fired furnaces are under repair the damper should be locked and the key kept by the foreman to prevent the possibility of the gas being turned on. Two men were severely burned in 1908, through neglect of this precaution.

Reference may be made at this point to the danger of back draught or flue-gas explosions to which boiler attendants are exposed by flames bursting from furnace doors. During 1908 no less than 187 men were injured in this way at steam boilers on factory premises. These accidents usually occur when firemen are breaking up banked fires. The unconsumed gases in the flues become ignited, and, upon explosion, escape by the furnace mouth. Few accidents would occur from this cause if attendants made a practice, before breaking up a fire, of opening the damper wide enough to allow a sufficient quantity of air to be drawn through the flues to carry away the unburnt gases, and the fires should not be broken up until this has been done. Another method of removing the unconsumed gases is to maintain sufficient draught by two or more 1 in. holes in the damper plate. In some cases, where flue-gas explosions at boilers and economisers have been frequent, the top or side of the flues has been fitted with explosion flap doors, which open with the force of the explosion and relieve the pressure.

Water-hammer Action.

Admission of steam under pressure into a pipe containing water is liable to set the water in rapid motion. This may also happen, while draining a pipe under steam pressure, by the condensation of the steam caused by its sudden contact with a large surface of comparatively

cold water. In either case the water will usually strike the side of the pipe or any obstruction, such as a valve, sharp bend, or dead end of a pipe, with considerable violence, accompanied by a hammer-like report. Water-hammer has caused the fracture of many stop valves and steam pipes and even a few blow-off valves and pipes. As these accidents are numerous they are classified separately in the Memorandum. They are due to defective design, use of unsuitable material, and neglect of attendants, and involve a careful consideration of such details as stop valves, steam pipes, and blow-off cocks and connections.

Undue Working Pressure.

Apart from disregard of instructions and precautions, explosions from this source have been due to over-estimation of safe working pressure, use of incorrect pressure gauges and overloaded safety valve or valves made fast by dirt, or by water freezing in the escape pipes.

Defective Design.

Many explosions and accidents have been due to defects in design, such as unsupported furnace flues, imperfect staying, want of provision for expansion and contraction, use of lap joints causing subsequent grooving, omission of strengthening rings on manholes and mudholes, use of cast-iron connections instead of steel, and use of unsuitable fittings.

Defective Workmanship.

This has been the cause of many explosions owing to the metal being injured, strained, or fractured in the processes of flanging, dishing, and bending of plates, drifting rivet holes out of line, and by the burning of plates and rivets; careless caulking, defective welding, badly made screwed threads on stays, tubes, and nuts are other forms of bad workmanship.

Defective Material.

Many explosions have been due to the use of laminated, blistered, or burnt plates held together by rivets of inferior quality.

WHO INVENTED PORTLAND CEMENT?

Within recent years it has been persistently stated, generally on or about Mr. I. C. Johnson's birthday, that that gentleman was the inventor of Portland cement. The claim was vehemently denied almost as often as it was made. The claim for Mr. Johnson was again advanced when, on November 30th, 1911, he died at the age of 101; and in commenting on it, we wrote, in our issue of December 6th, that the statement that he was the inventor of Portland cement, "while it might possibly be defended on the ground that Mr. Johnson was a pioneer in the industry, and among the first to effect improvements which put the product upon a commercial basis, seems to ignore the fact that the actual 'discovery' of the material is credibly attributed to one Aspdin." This view, though correct as to the main issue, is subject to modification in the light of certain data that have now been published in the "Cement Age."

The History of the Invention.

These include letters in which Mr. Johnson recalls the history of the invention. It is true, he says, that the name Portland cement is due to Joseph Aspdin, a builder at Wakefield, who, in 1811, made certain experiments. The clay

roads in his district were mended with limestone. Aspdin thought that the roapscrapings would make lime. He found that it did not slake, so he pulverised it, and then found that it set hard. It was not until 1824 that he took out his patent (Specification No. 5,022, October 21st, 1824). Mr. Johnson says that Aspdin failed to manufacture a fully satisfactory product: his "Portland," Mr. Johnson says, "was no more like the cement that is made to-day than chalk is like cheese." On the other hand, Mr. Johnson claimed that, as works manager to Messrs. John Bazley White and Sons, of Swanscombe, in Kent, he produced Portland cement which was shipped to the French Government, whose tests of it were set up as a standard of quality. "I formed a company," Mr. Johnson writes—"I. C. Johnson and Co., Ltd.—made much cement, and supplied the French Government with many thousands of tons for works at Cherbourg, Havre, and other ports, got a gold medal for the excellence of quality, so I can fairly claim to be the first manufacturer of a cement that would pass the tests of the exacting engineers of British and foreign Governments."

An independent account

of the origin of Portland cement was supplied by the well-known chemist Dr. Wilhelm Michaelis, of Berlin, to the "Tonindustrie Zeitung" of March 25th, 1905. Dr. Michaelis then wrote: "For the answering of this question,

Who discovered Portland cement?

it has been a particularly fortunate circumstance that one of the very earliest makers of Portland cement, a contemporary of Joseph Aspdin, is still living—namely, Mr. I. C. Johnson—now in his 95th year, and still mentally and physically vigorous, and that I have been able to discuss with him the history of the evolution of Portland cement in an exhaustive correspondence. The communications of this eye-witness and an exhaustive study of English technical literature, especially that of the first half of last century, have now led to the certainty that the contention that J. Aspdin was the discoverer of the Portland cement cannot be maintained.

An Accidental Discovery.

"According to William Aspdin's statement in English technical journals, which statement has never been contradicted, his father, Joseph Aspdin, produced this cement as early as 1811, but only in 1824 patented the same as Portland cement. Clearly this discovery was an accident. At that time the opinion prevailed that a usable hydraulic lime or cement, for example Parker's Roman cement, should only be moderately burnt, as is the case with white lime; that it should yield a soft powder, which when mixed with water will set quickly and rise at the same time in temperature. All other burned, or clinkered or fused products of burning were discarded as useless, which was quite appropriate in the case of mixtures poor in lime of these days with a proportion of one part by weight of silicate to about 1.2 parts of lime. Fate willed it, however, that upon some one occasion such discarded clinkered pieces (but in this instance also much richer in lime) should be ground and gauged, and that these, although they did not perceptibly rise in temperature, hardened ultimately extremely well, and showed instead of the yellow-brown colour a very pleasing stone-grey. As, however, the Aspdins knew nothing of chemistry, it was very difficult to achieve a result of this kind,

as we know now very well to be the case, for either the mixtures may have been too low, or too high in the proportion of lime, and then on cooling either fell to dust, or yielded a 'blowing' cement, or in case they had been badly mixed, both of these together. The difficulty, therefore, lay herein: To produce a reliable clinkered cement; and in fact it was not until the fifth decade of last century that this difficulty was in some measure overcome.

The Evolution of "Portland."

"We have then to represent the evolution of the matter to ourselves as follows—namely, that Joseph Aspdin experimented from 1811 to 1824, but only by a crude 'rule of thumb' method, and that by 1824 he had come so far that he believed himself able to control the proportions of the mixtures and the burning process completely, and that he then took out the patent. The difficulties, however, continuing to exist, the consequence was that the new cement was not reliable. Failures took place, structures gave way owing to insufficient strength and in consequence of 'blowing.' The Aspdins knew very well, however, how to keep the secret, and so much so that the matter remained in such a degree a secret even to themselves that they were never able completely to master the difficulties. No one was allowed to enter their premises. The workmen even did not know or understand the process, for the master had a hand in the charging of every kiln, strewing between the layers different materials, sulphate of iron, sulphate of copper, bone, ash, iron slag, etc., etc.

Johnson's Experiments.

"In the beginning of the 'forties Mr. I. C. Johnson occupied himself with many experiments with a view to produce the new cement, and having paid considerable attention to practical chemistry was able to do this. Johnson was at that time manager in White's factory at Swanscombe (Kent), and made Frost's cement. He found one day, quite by accident, that overburned, almost fused pieces, which had been discarded as useless, and lain aside after being ground and gauged, hardened slowly but ultimately excellently, and showed a pleasing light grey colour. Closer examination showed that the pieces were distinctly richer in lime than in the ordinary Frost's cement, which was made with two parts by weight of chalk to one part of Medway clay, and burned at 900 to 1,000 C., and the litre weight of which, even with the coarse grinding of those days, amounted to only 0.9 to one kilo. Mixtures richer in lime were now made and harder burned, with a proportion of five parts by weight of chalk to two parts of Medway clay, with burning almost to clinkering; a good cement was thus obtained, and as Johnson was enabled to arrive at a sufficient certainty with regard to the proper proportions in the mixtures it became possible to produce a fairly reliable Portland cement. About 1848, then, the Portland cement manufacture began in England to make progress, but for several years thereafter it was carried on in an empirical manner,—that is, it was carried out by what is in England called 'rule of thumb.' The circumstances alone that the chalk and clay in England is in a high degree regular in quality rendered it possible under such conditions to produce a sufficiently reliable article. Even in the beginning of the 'seventies there was as good as no chemical supervision in the English cement works, and it may be recalled that Dr. Bleibtreu, the founder of the Stettiner

Portland Cement Works (Zulchow), derived his knowledge of the process of manufacture of this cement as a worker in one of the English cement works, and that was in the first half of the 'fifties, and, therefore, 30 years after Joseph Aspdin had taken out his patent."

The Case for Johnson.

"I. C. Johnson, therefore, who had practically studied chemistry, was the first to succeed in producing reliable Portland cement (and in White's works) in such a way that this binding agent found recognition and became generally adopted in the building trade, and him it is we have to thank that the superiority of Portland cement was recognised and worthily acknowledged. I. C. Johnson has earned for himself unquestionable merit in regard to the development of this industry by placing the child so long weakly and helpless on its feet and teaching it how to go, and he can to-day regard with satisfaction the magnificent expansion which the Portland cement trade has obtained throughout the whole world."

The article in the "Cement Age" contains a facsimile reproduction of the subpoena served on Mr. Johnson in the action, in 1855, of George Tallentire Gibson against William Aspdin and Augustus William Ord; Mr. Johnson being summoned as an expert witness as to the character of the kilns, engines, and mills which Mr. Gibson had erected for Aspdin and Ord at Gateshead for the manufacture of Portland cement.

STEEL SPECIFICATIONS.

Lecturing on this subject before the Junior Institution of Engineers, Major H. B. Strange, late R.A., said that it is remarkable what results have been obtained in the past in the manufacture of tool steel without the assistance of analytical chemistry, and, one may also say, with very little idea of the ultimate chemical composition of the material itself. By the combined experience of the maker and user of a tool, steel material of a definite description was always supplied for a definite purpose, whoever was the maker of the steel in the first place. Modern science has done but little to alter the system thus empirically arrived at and nothing whatever to improve the quality of the products, except the addition of elements which 50 years ago were very rare or commercially unknown.

Until quite recently sorting into different tempers or degrees of hardness of the steel produced in the crucible furnace was done by breaking off a piece of the ingot, and depended on the decision of the experienced man, who was guided by the appearance of the fracture, and he was the only judge as to the cause of the defects and of the remedies to be applied by heat treatment; but now physics has assisted us by enabling the arbitrary signs, such as certain colours denoting definite temperatures, to be replaced by definite measurement.

The hardening of steel is far from well understood even at the present day, and there is plenty of scope still for the investigator. In steel for edge tools the manufacturer practically finishes his work when he supplies the bar steel, the actual hardening and tempering of the tool after fashioning to the shape required being done by the toolsmiths themselves.

With regard to mixing drill steel, this is also treated by being actually worked. Here again the user can only satisfy himself of the suitability of the material by making actual tests on the work to which the drill is to be subjected. For testing files, there has been recently introduced a well-known machine for making tests. Files in Russia have been systematically tested for 25 years on specially designed machines, and they arrived at the same conclusions as have now been generally conceded in England, namely, that the results ascertained by automatic mechanical testing are not always even of relative, to say nothing of absolute, value. The system consists in the file being pushed under a pressure of about 30 lbs. over the face of a bar of hard steel one inch square, and the efficiency of the file is determined by the number of cubic inches filed away in a definite number of strokes, or before the file ceases to cut; but here, again, the test bar of one inch which has been used is quite as important a factor in the test as the file itself.

In all testing, either cutting tools, drills or files, it is of primary importance to remember that the material which his tools are to attack is just as important as the material of which the tools are to be made, and that it will frequently pay him well to consult the manufacturer before determining which brand of tool steel, drill or file he will adopt.

In the case of the smaller articles the buyer is a practical man who has spent his life in working with steels of the same type. He seldom changes his source of supply, as the particular idiosyncrasies which pertain to each manufacturer's steels may easily upset his practice, which is mainly based on observation and rule of thumb, carried out over very lengthy periods, sometimes several generations. No slight saving in the price, of a few pence in the pound, would compensate him for the loss incurred in reputation and pocket by making changes unless most thoroughly examined beforehand.

The improvement in steels of this type is not so much in the quality as in the price. Newer mills for rolling, more economical methods of manufacture in each branch, have steadily cut down the initial cost of the steel, and in this way a steady fall in the price of these goods is continuously obtained.

It will be realised that it is not possible to employ very rigid or detailed specifications for steel of this kind. The manufacturing practice varies very little from year to year, depending principally on the skill and personality of the individual

workman and the general closeness of the supervision exercised by the steel maker in seeing that only the very best steel is allowed to leave the works.

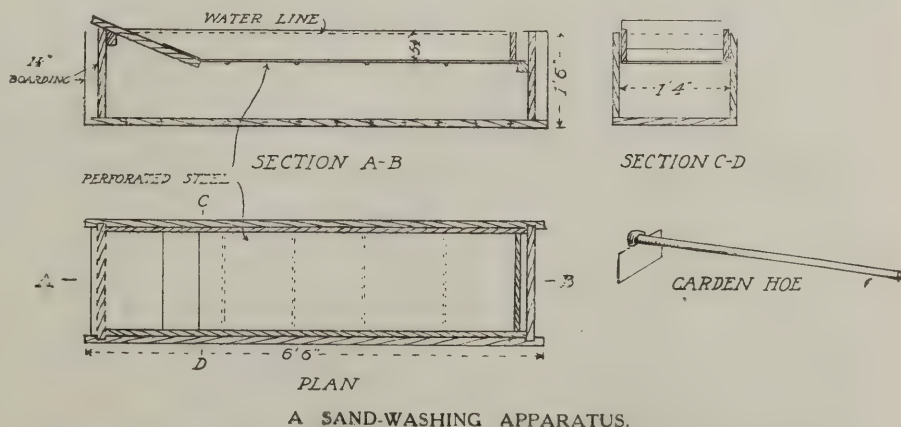
In the event of any trouble arising, as it must do from time to time with material which is so far human in its nature in that it is liable to so many diseases, the consumer goes at once to the manufacturer, and they put their heads together with a view to finding out the best cure for the ailment.

Engineers and buyers should be very careful to see, when comparing Continental prices with British, that the inspection they have arranged is identical in every detail, as what may appear to them an omission of no import, may seriously affect the price and render any comparison of prices misleading.

THE WINCHESTER OAK PANELLING.

An interesting sequel has resulted from the publication, in connection with the statement that Wykeham's beautiful chapel at Winchester College is to be panelled again in oak, of the fact that the famous old Grinling Gibbons panelling was granted to a Wykehamist, and that after several vicissitudes it found its way to Hursley Park, near Winchester, where it now adorns the entrance hall of Sir George Cooper's mansion. In the story, which was told in the "Morning Post," it was mentioned that the ancient panelling was begged by a Wykehamist for his own private chapel, but that subsequently he abandoned his project, and sold the woodwork. The Bishop of Worcester now writes:—

"I am the Wykehamist in question. When I was at school I was not learned in art, but I admired the chapel woodwork, especially the screen with its fine pierced panels and the doorway surmounted by its broken pediment and the founder's head and mitre. On returning to the school I was distressed to find this valuable work partly piled in the open air, partly stored in a loft, and partly cut up as a screen for the organ bellows. I therefore asked whether I might acquire it, as my brother and I wished to fit up a disused private chapel in my home in Wiltshire. Thus I possessed it. Subsequently it was found to be too large both in quantity and design for that purpose. Presently others besides myself began to recognise that very fine work had been removed in favour of what, at all events, cannot be described as equally meritorious, and I offered the College the opportunity



The above illustration shows a simple apparatus, invented by Mr. Joseph Rees, of Oxford, for washing sand for reinforced concrete work. Mr. Rees informs us that, by means of a garden hoe, two men can easily wash fifteen tons of sand per day in this appliance.

of having it back. This was refused. Later on I offered it to Bishop Thorold for Farnham Castle, thinking that if it could not be used in the founder's College it might be used in his residence. But Sir Arthur Blomfield would not have it. I then proposed it for St. Paul's Cathedral. Again without result. My next effort to place the woodwork worthily was to offer it again to the College in the hope that it might be used for the Quincentenary Library. Once more it was declined. After these disappointments I began to fear that it would meet with the same fate down in Wiltshire that I had saved it from in Winchester, and that it would perish by neglect. So I informed the Governing Body that I saw no other course than to sell it to someone who would value it, and this proposal met with their assent. I therefore disposed of it for a moderate sum to my friend and neighbour the late Lord Heytesbury. After this I heard no more about it till Dr. Fearon informed me that he had seen it at a dealer's—I think in Cheltenham—who had sold it for a very large sum for Hursley. My whole course from the first was to save a valuable work of art, made more valuable by its associations; and finding that I could not use it as I first intended, my principal hope was to get it back to the old school when the tide turned and its value became recognised. In this I failed, but I did not trouble the public with these details because I did not wish to bring odium on the Governing Body of the day, who had kindly met with my wish to preserve the work in the early years. . . . I am comforted by the reflection that my action saved a fine piece of artistic work, but I should have been happier if I had been more successful, and had lived to see it go back to the place for which it was designed."

ROYAL SANITARY INSTITUTE.

The Forthcoming Congress at York.

A Congress and Exhibition of the Royal Sanitary Institute is to be held at York from July 29th to August 3rd next. The president of the Congress will be the Archbishop of York, and among sectional officers will be the following:—

Sanitary Science and Preventive Medicine: President, Sir Shirley F. Murphy; Recording Secretary, Dr. Charles Porter (Medical Officer of Health, St. Marylebone).

Engineering and Architecture: Mr. J. Walker Smith, M.Inst.C.E. (Chief Engineering Inspector, Local Government Board for Scotland); Recording Secretary, Mr. A. Saxon Snell, F.R.I.B.A.

Industrial Hygiene: President, Sir Thomas Oliver.

Engineers and Surveyors to County and other Sanitary Authorities: President Mr. A. F. Grotorex, M.Inst.C.E. (Borough Engineer and Surveyor, West Bromwich); Recording Secretary, Mr. J. S. Brodie, M.Inst.C.E. (Borough Engineer, Blackpool).

Sanitary Inspectors: President, Mr. T. G. Dee, Westminster; Recording Secretary, Mr. A. E. Drummond (Chief Sanitary Inspector, York).

Change of Address.

Mr. Detmar Blow and Mr. Fernand Billerey have removed their offices from 3, Pall Mall East to 10, Grosvenor Road, Westminster (immediately below the Houses of Parliament).

ENQUIRIES ANSWERED.

The Architect and the Penalty Clause.

A. C. H. writes: "What is the position of an architect in dealing with an account? The variations and additions on the contract are agreed, and there is a time and penalty clause. The architect agrees to allow a certain extension of time in which—in his opinion—the work should be completed, and issues his final certificate. Should he state thereon what extension of time he has allowed? The building owner refuses to pay, and insists on the penalty being paid for the remainder of the time that the work was incomplete."

—It is usual for the architect to decide such a question as this, taking into consideration such circumstances as additional work, strikes, troubles with workmen, bad weather, difficulty in obtaining special fittings, etc. His decision is final and binding upon both parties, and can only be impugned upon proof of fraud or wrongful behaviour upon his part. F.S.I.

Cements for Pointing in Exposed Situations.

E. S. (Dudley) writes: "I propose to use Parian cement for the external pointing to brick facing. The joints are $\frac{1}{2}$ in. wide, and are to be raked out as the work proceeds, and pointed up at completion. Does this cement make a perfectly satisfactory job? The building is in an exposed situation."

—Keene's Parian and other similar "cements" are gypsum plasters, subjected to a chemical process in manufacture to retard their setting properties, in order that they may be worked. Parian is sometimes used for pointing glazed brick dados or faience internally, but all gypsum plasters are more or less soluble, and are accordingly unsuited for external use. A special brand of white Portland cement is made—I believe by Messrs. Skelsey and Co., of Hull; or ordinary Portland cement, mixed one of cement to four of silver sand, with a little powdered whiting may be used. G.

Brick and Stone Pediments in London.

W. H. F. (Bedford) writes: "Please give the names of some buildings in London (fairly central) where I could see a classical pediment with pilasters in brickwork and also in stonework."

—A correct classical pediment and pilasters in brickwork will be difficult to discover, unless on a very small scale—as a window dressing, for instance—the projections possible in brickwork being insufficient for the fully detailed classical cornice. In brick buildings the cornice and pediment of Renaissance times was usually of wood. A fine example by Wren, with cut brick pilasters and entablature, stood formerly in Christchurch Passage, and is now re-erected at Christ's Hospital, Horsham. Stone pediments there are in plenty. The entrance to Middle Temple Lane, Fleet Street, also by Wren, is a good example with pilasters. G.

Owner and "Extraordinary Traffic."

A. P. writes: "What right has a road authority to claim against the building owners for extraordinary traffic after building operations? Is it customary to have a lump sum provided in the bill of quantities for this special purpose, to be paid to the authority by the builder? What is extraordinary traffic on a main road?"

"Extraordinary traffic" is a most elastic term, meaning almost any kind of traffic upon a public highway beyond that of everyday life. In many cases it has been rather unduly pressed by the authorities, and at present the decided cases limiting its incidence are not very clear.

Timber carting is a fertile source of trouble by reason of claims of this kind, and I have even had a claim made for carting stones over one road for the purpose of repairing another road in the same neighbourhood. In large building operations, especially when carting has taken place in bad weather and possibly by the aid of traction engines, considerable damage is often done to the public highways, and it is then not unreasonable that something should be paid (though it may be argued that the new building is adding to the rateable value of the district). I advise you to compromise the matter as soon as possible if any claim has been made upon you. Do not go to a court of law. F.S.I.

Electric Light Plant at a Country House.

A. P. writes: "Are direct-driven dynamos preferable to the belt-driven type in an electric light plant installation at a country house? Is it essential to have two separate storage batteries—one for lighting and one for power, so as to avoid the jump in the light when power is used? If one battery only is used, will a three-cable main obviate the difficulty?"

—Direct-driven dynamos are preferable to belt-driven dynamos only because the combined plant occupies less space. Where this is not of importance, a belt-driven dynamo will be found equally efficient, and cheaper, as it will give the required output at a higher speed, and can therefore be made smaller.

The amount of power likely to be used at a country house should not warrant the necessity for a separate storage battery (in addition to the one used for lighting), in order to avoid a jump in the lights—especially as power is not generally employed at night. Assuming, however, that there is a large proportion of power, and that it is used at night, the three-wire system will diminish the trouble, but is not worth while installing unless the runs are long. In any case it is largely a question of installing plant and mains of sufficient power and margin to meet sudden overloads without a perceptible flicker.

Cork Paint.

A. J. H. (London) writes: "I am troubled with excessive condensation on a thin reinforced concrete roof during the changeable weather. There is a paint used on the 'tube' railways and on ships in which, I think, cork in small lumps, or shavings, is used to counteract this defect. Can you tell me the name of such a paint, or whether the cork is obtained separately and mixed with ordinary paint?"

—I am unaware of any ready-mixed cork paint on the market, and doubt whether such a mixture could be applied by any ordinary methods. Galvanised iron roofs are sometimes painted beneath, and, while tacky, rough-cast with granulated cork, which may be obtained from fruit salesmen, to whom it comes as packing with imported grapes. This absorbent coating is a palliative to the dripping of condensed moisture in such cases.

I know of no instance where such a paint has been applied to reinforced concrete, but presume that it might be similarly effective. Do not forget, however, that paint cannot usually be safely applied to Portland cement work until two years after its execution. A solution of hydrochloric acid and water, applied in two coats with intervals of two days, is said to be the best preparatory measure for painting on cement. X.

Putty Lime in Cement.

QUERIST writes: "I have specified three parts white sand to one part Portland cement for the last coat of stucco work to the external walls of a building, dashed while wet with dry 1/2 in. alabaster spar. Most of the work has proved satisfactory, but in some parts the cement work is not so hard as desired, and there are cracks on the face several inches long, and wide enough to admit a coin edgewise. The builder admits having used a small quantity of Buxton lime (putty) to make the material work easier, and perhaps also to get a whiter effect. Does the addition of this lime injure the setting properties of the cement, and does it account for the cracks? The plasterer says the proportion of putty lime will not exceed 8 to 1, but I have reason to suppose that it would be probably much more than that amount."

—It is a common practice in America for external plastering to be executed with well-haired lime mortar, to which one-third its bulk of Portland cement is added immediately before use for the scratch coat, a similar mixture without the addition of hair being used for the floating, finished afterwards with pebble dash. This is found quite satisfactory. A mixture recommended by the Associated Portland Cement Manufacturers

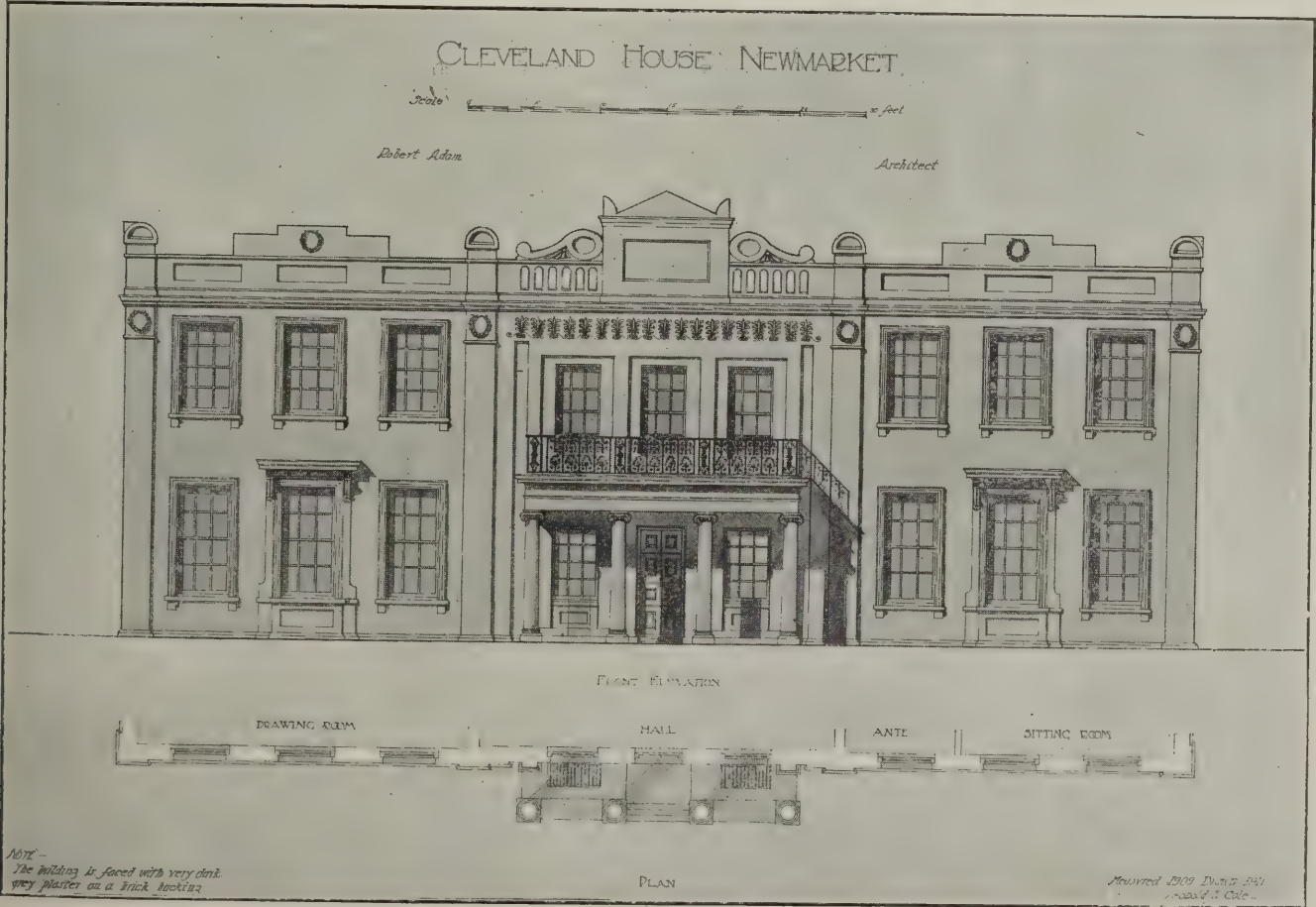
consists of one part Portland cement, four parts clean sand, half-part lime putty; silver sand with a small quantity of powdered whiting being advocated if a white plaster is desired. Shrinkage cracks generally appear in a mortar which is very rich in Portland cement—not less than two parts of sand to one of cement should be used. Too rapid drying (from wind or sun) is a possible cause of the cracking in the case mentioned, or perhaps the cement was dead or had partially set, and had been worked up, for which purpose the lime putty was added. G.



CLEVELAND HOUSE, NEWMARKET.

CLEVELAND HOUSE, NEWMARKET.

Cleveland House was designed by the brothers Robert and John Adam. The date of its erection is between 1762 (when Adam returned from Italy) and 1792 when he died. The house takes its name from its first owner, the Duke of Cleveland, a famous patron of the turf. The present owner is Miss Hammond, of the well-known banking family. Sir Christopher Wren was at one time engaged on the royal palace for Charles II. here, but this is in great part destroyed.



PORTLAND CEMENT ON PUBLIC WORKS.*

By GERALD THORNHILL, Assoc. M. Inst. C.E.

During the last few years there have been many improvements in the manufacture of Portland cement, the most notable being the introduction of rotary kiln burning and fine grinding. These improvements, in addition to cheapening the production, and consequently widening the demand, have introduced new problems for both manufacturer and user.

Not very long ago engineers were content to specify simply that cement used on contracts under their charge must be obtained from an approved firm of manufacturers, and were also further content, when that clause had been fulfilled, to pass any cement the makers cared to send. Nowadays, on public works of any size, every consignment of cement received is thoroughly tested on the works, generally under the almost direct supervision of the resident engineer.

It was the author's intention, in this paper, to enumerate the different tests which should be carried out in order to ensure only perfectly sound cement being used; to explain why such tests are necessary; and, further, to comment generally on the properties and use of Portland cement.

Laboratory of Works.

A cement-testing laboratory should consist preferably of three rooms. One of these must be so constructed that its temperature can, by means of some simple contrivance, such as an oil stove, be so regulated that it never falls below 58 deg. nor rises above 64 deg. Fahr. This room must be absolutely free from all draughts. In it there should be a slate slab on which the cement and water can be mixed, rows of shelves where briquettes and pats may be kept in glass dishes, damp boxes in which newly made pats may be placed, and the initial set testing instrument.

The second room is a small one, and used as an office for writing up the results of tests, checking cement consignments, etc. This room may also contain a slate slab, as it is sometimes convenient to have two gauging tables, but it should be used as seldom as possible. A chest of drawers as a receptacle for specimens showing peculiarities under any test may also find a place here.

The third room should be set apart for carrying out the boiling and all mechanical tests, with the exception of the initial set test, and should contain all the various machines and appliances required for the purpose.

Here, too, the cleaning and greasing of the moulds should be done, and around the room should be shelves for storing the various samples of cement.

Chemical Analysis.

A representative sample from each parcel of, say, 50 or 100 tons, should be analysed, and the result compared with the specified analysis.

The usual proportions of the principal component parts of Portland cement are lime, 62 per cent. to 65 per cent.; silica, 18 per cent. to 20 per cent.; and alumina, 6 per cent. to 8 per cent.

The analysis should not show more than 3 per cent. of magnesia, 2.75 per cent.

of sulphuric anhydride, and 1 per cent. of insoluble residue.

The principal development of recent years has been the increased percentage of lime in the better-class cement. A few years ago 60 per cent. was considered the outside limit, while it is quite common nowadays to find sound cement containing 64 per cent. of lime.

Care should be taken, however, that no more lime is contained than will combine with the silica and alumina present, and the chemical formula for this, given in the British Standard Specification, should be strictly complied with, otherwise free lime will be found in the product.

Some manufacturers vary the percentages of alumina and silica to suit the "set" required; a low percentage of alumina is generally found in a slow-setting cement.

The specific gravity should not be more than 3.25 and not less than 3.15 when the cement is freshly ground.

Fineness.

Modern engineers specify a degree of fineness that would have filled with dismay the manufacturers of twenty years ago.

At that time the usual fineness test was that the cement should pass through a 76 by 76 sieve—that is, one having 5,776 meshes to the square inch, with not more than 10 per cent. residue. At the present time it is quite common to specify not more than 10 per cent. residue on a sieve having 32,400 meshes to the square inch.

The reason for this great improvement in grinding is fairly obvious when one considers the action of water on cement. Water acts only on the surface of each grain of cement; it does not affect the interior of the grain, which always remains inert. Now, a small particle has a greater surface in proportion to its volume than a larger one; consequently, the more finely a cement is ground, the more completely will it combine with water.

Initial Set.

To conduct this test, neat cement is mixed with as much water as will ensure a standard consistency, which can be gauged by a standard plunger; the mixture being filled into a mould resting on glass and then placed in the constant temperature room in a position free from draughts. From time to time the pat must be placed under the needle used for testing the initial set. When this needle fails by its own weight to penetrate to within 3 millimetres of the bottom of the mould, the initial set takes place. The British Standard Specification fixes the initial set as taking place when the needle fails to penetrate to the bottom of the mould. This is not correct in the case of some slow-setting cements, which have a kind of false initial set, as they resist the needle at about 1 millimetre above the bottom of the mould, and remain in that condition for some time, and in some cases for an hour or two. There is no size of mould for this test in general use, but it is most important that a standard size should be adopted. In every case the largest mould has the quickest initial set. Now the larger the mould the nearer the approach to working conditions. Unfortunately, however, the size of mould is limited by the amount of quick-setting cement that a man can handle. It has been found in practice that the best size of mould is

1½ in. deep, 4½ in. diameter at the top, and 4 in. diameter at the bottom, made of ½-in. iron.

Before commencing this test care should be taken that the air, mould, water, and cement are at the same temperature—between 58 deg. and 64 deg. The sample must be exposed in the constant temperature room for 24 hours before testing.

The Vicat needle is the instrument generally used for obtaining the initial set; but some modification of it is undoubtedly necessary, as, owing to the fact that the needle has to be lowered by hand, the personal element is bound to creep into the result. This difficulty is completely overcome by the simple contrivance of attaching a string to the top of the needle and leading it over a couple of pulleys to a small reel. By turning the handle of this reel the needle can be lowered at the same rate and with exactly the same force every time.

Until very recently the initial set has been very much neglected by British engineers, who have been content to specify the limits of the final set only. But the initial set is now being recognised as of primary importance, whilst the final set is quite properly being relegated to a secondary position.

The initial set of any consignment of cement should be regulated according to the conditions under which the cement is to be used. Thus, if an engineer is putting in concrete under water he should order quick-setting cement, and if he is building a dam where the wet concrete is shovelled about, punned, and trampled upon for an hour after mixing, he should order a slow-setting cement. In other words, the time between the gauging and initial set must be longer than the interval necessary to allow of the concrete being placed in its final position.

If there is movement of the cement after the initial set has taken place, the set is liable to be broken, and if it is broken the concrete or mortar will remain soft for a considerable time, and will probably shrink perceptibly when it does get hard.

Shrinkage.

It should be noticed that the mould referred to above is tapered, being 4½ in. diameter at the top and 4 in. diameter at the bottom. The reason for the taper is that, if made so, a test for shrinkage may be carried out with little trouble. The cement is allowed to set for 48 hours, then the glass is removed and two sharp taps with the butt end of a trowel are given to the top of the cement; if the tapping causes cement to project beyond the bottom of the mould, it is obvious that shrinkage has taken place.

There is no shrinkage test mentioned in the British Standard Specification, but it is important, as shrinkage often occurs, and, if not detected, is liable to produce contraction cracks in concrete.

It is readily cured by a few days' aeration—a fact which denotes that the fault is due simply to immaturity of the cement.

Final Set.

It is only necessary to touch lightly on the question of final set, because it is of very little practical use, and also because the method of conducting the test is unscientific and arbitrary. The final set is said to take place when the needle fails to make an impression on the pat, but a mark which is perceptible

*Extracts from a paper read before the Institution of Water Engineers.

to one person may be quite imperceptible to another.

A far better test is to ascertain the pressure necessary to penetrate with a standard drill a standard distance into the block. By this method the time necessary for any cement to attain a standard degree of hardness can be ascertained.

The present final set test gives no idea of the hardness of the sample tested, for if half-a-dozen different cements are tested for hardness at the time of their final set the results will be found to be widely divergent.

Soundness Tests.

The soundness tests are best conducted in the following manner: Take 8 oz. of cement, mix with 26 per cent. of water (rather more if quick-setting), work up quickly into a stiff paste, and divide into four equal portions. Place the first three on pieces of glass and work up with a trowel into smooth round pats, leaving them about half an inch thick. Put one, the "air" pat, in a place free from draughts and of even temperature; the next, the "boiling" pat, into a damp box or humid chamber for forty-eight hours. Allow the third, called the "water" pat, to remain in the air until a skin has formed, then place it in water of a temperature not less than 58 deg. and not more than 64 deg. Fahr.

Take the remaining portion of cement, and, with the addition of a few drops of water, work it up and fill a Le Chatelier mould, then with glasses on the top and bottom, weight it and place in water of the same temperature as the above for forty-eight hours, afterwards boiling it for six hours with the "boiling" pat before mentioned.

"Air" Pat.

After the expiration of forty-eight hours examine this carefully, and if it is wrinkled or shows small hair-like cracks, it will be evidence, in the former case, of shrinkage or contraction of the cement, and, in the latter case, of the presence of free lime. Of late years, since the introduction of scientific methods of manufacture, one rarely meets with a cement so lacking in combining qualities as to show cracks in this test; nevertheless, if they are observed, the presence of free lime will be confirmed by the cracking and warping of the "water" pat, by expansion in the Le Chatelier test of more than four millimetres, and also by signs of disintegration and soddenness in the "boiling" pat.

The evidence of contraction is readily confirmed by the tapered mould already referred to, and by the fact that the Le Chatelier test shows little or no expansion.

If the test is not confirmed in this way, it will generally be found that an unobserved current of air, or the overheating of the room, has brought about too rapid evaporation, and consequently caused the pat to be defective.

"Water" Pat.

After forty-eight hours' immersion the pat should be found to be firmly stuck to the glass at the edges, and no crack or blemish should be visible.

If small and superficial cracks appear at the top or edges, but the pat adheres firmly to the glass and the other tests are satisfactory, it may be safely assumed that the disturbance owes its origin to an undue proportion of the gypsum present in the sample being brought

to the surface in the process of forming and patting.

Some sound cements will not endure in this test the unbalancing of their constituent parts. On the other hand, if the pat is cracked through, warped, or lifted from the glass at the edges, there can be no doubt that the sample is immature. The proof of this lies in the fact that such a sample can always be made perfectly sound and able to pass this test by a simple process of aeration.

"Boiling" Tests.

If there is perfect combination in setting, this pat should dry almost instantaneously on being taken from the boiling water, and have a sharp metallic ring when struck.

On the contrary, if the pat has a sodden appearance, or a network pattern shows as the water dries off, or, worse still, if obvious cracks appear, it is a sure sign of immaturity, and consequently of a lack of perfect combination.

Le Chatelier Test.

If the distance between the points of the mould when measured after boiling is more than four millimetres greater than the measurement before boiling, the cement is probably immature, and this will generally be corroborated by the water and boiling tests. If the expansion is only one millimetre or less it will usually be found that there is perceptible shrinkage in the cement, and confirmation of this must be sought in the tapered ring mould test.

Tensile Tests.

In calculating the strength of any concrete structure engineers assume that concrete offers no resistance at all to tensile stress. On the other hand, the breaking stress of concrete in compression is very important, and enters largely into any problem relating to the safety of the structure.

Yet, the almost universal practice, in drawing up a specification for cement, is to state that briquettes at a certain age shall resist a tensile stress of a certain amount, the theory being that the tensile is closely related to the compressive strength.

Briquettes for tensile tests are made in two forms—namely (1) neat briquettes—that is, neat cement mixed with water only; and (2) sand briquettes, made of one part of cement and three parts of standard sand.

The advent of fine grinding has been the death of the neat tensile test, for it has been established that neat briquettes made from very finely ground cement are weaker at certain ages than the same cement coarsely ground. Such a conclusion is very misleading, and the sand compression tests prove that the neat tensile tests are inaccurate.

Now, with regard to the sand tensile test, Table I. gives the breaking stresses in tension and compression arrived at by a cement manufacturer and three experts whom we will call A, B, C and D,

when testing the same sample. Only the average strength is given in the tables, and this average is obtained by breaking five specimens at each age; the difference between the highest and lowest of the five is in some cases as much as 30 per cent.

A close examination of the averages will reveal the fact that the personal element enters very largely into the making of briquettes. It will be noticed that the difference between A and D at seven days is 27 per cent., and between B and D at twelve months 37 per cent.

Again, comparing the tensile strength with the compressive strength, at seven days old A makes the latter nineteen times as great as the former, whereas D only makes it nine times, and at twelve months old B makes it seventeen times and C only ten times. Moreover, it is impossible to standardise this test, for each sample requires a different percentage of water, and only an expert can tell how much water should be used for any particular cement. Any increase in this amount of water brings about a marked decrease in the initial strength of the hardened specimen.

Taking all these facts into consideration, how can it be argued that the tensile test gives one any idea of the compressive strength of concrete?

Apparently, then, the only reason for continuing the tensile test is that it enables the engineer to form an idea as to how a particular consignment of cement compares in tensile strength with the established standard strength. But even here much depends on the skill of the man who makes the briquettes, for, in the experts' figures referred to above, the difference between two of the averages at seven days is about 30 per cent.

More important than this, however, is the fact that the tensile test altogether fails to reveal a defect that unfortunately appears occasionally in some of the modern cements—namely, the hardening of the outside skin while the interior of the cement remains quite soft. A tensile briquette has a periphery of 4 in., while its cross section is only one square inch, so that, assuming each of the four surfaces hardens, the strength of the briquette will be almost as high as if it had hardened right through.

Some cement of this sort came under the author's observation a few months ago. Pats 4 in. in diameter and 1½ in. thick, made of neat cement, were easily broken with the fingers at twenty-four hours old, the interior of the pats being soft and crumbly, while a thin surface skin was quite hard. The hardening test showed a resistance of only 30 lb. for a penetration of 19 millimetres. An expert's report on this cement showed the initial set to be 2 hours, final set 6½ hours, neat tensile test 3 days, 500 lb., and at 7 days, 700 lb., and sand tensile test at 7 days, 280 lb.

A cement may, therefore, pass the British Standard Specification tests, although it has this very serious defect,

TABLE I.

Name of Tester.	Sand Tensile in lbs. per sq. inch.					Sand Compression in tons per 2½ in. cube.				
	7 days.	28 days.	3 mths.	6 mths.	12 mths.	7 days.	28 days.	3 mths.	6 mths.	12 mths.
A	285	370	410	510	550	18.0	20.4	25.8	28.5	29.0
B	303	338	350	343	380	15.1	21.3	22.0	22.7	22.0
C	356	495	495	560	602	16.8	19.2	21.5	21.3	21.1
D	393	368	492	458	605	11.3	14.1	17.8	20.3	22.5

and it would seem that the only method of detecting it is to bore through a pat, measuring the penetration and the resistance.

This constitutes a test for hardening, which can be conducted after either 24 or 48 hours. The test, being made on a small neat cement pat, is very much accelerated, and the result is comparable with the state of the concrete at about a week old.

An experiment was made to ascertain what relation, if any, there was between the hardening of neat cement and the sand tensile and compression tests at one, two, three, and seven days old. The results may be taken as showing that the hardening compares more closely with the compression test than the tensile test does.

Apparently, then, the only reason why the tensile test should not be superseded by a hardening test is that no standard hardening strength has yet been established, but that is only a minor matter, and can easily be remedied in a very short time.

NORTHERN ARCHITECTURAL ASSOCIATION.

Mr. Henry C. Charlewood on Architectural Topics.

The inaugural address delivered by Mr. Henry C. Charlewood, F.R.I.B.A., as President of the Northern Architectural Association, at Newcastle-on-Tyne, in November last, has now been issued in pamphlet form.

The first portion of the address is mainly occupied with a review of the past year's work of the Association, and of the building topics of the year. During the year, the Corporation of Newcastle, and the Tynemouth Corporation, each co-opted two Association members to act on the Town Planning Committee. Mr. Charlewood regretted that the Corporation of Newcastle had failed to pass their Bill in which a restriction of advertisements was included. Not that advertisements themselves are without artistic merit; the chief objection to them arises from the way in which they are placed. He would suggest that if they are allowed to be placed on the front or even on the gable-end of a building, they should be confined to the limits of certain frames provided for the purpose. In Paris, Brussels, Berlin, and Rome, the advertiser is restricted, and it is to be wished that our own towns will follow their lead.

Mr. Charlewood, remarking that as of late years a good many architects or architectural assistants have been disposed to seek employment in the colonies, it might be of interest to call attention to what is going on in some of them, quoted some interesting information which had been received from an associate who had been in practice in Vancouver for the past three years. From this it appears that architectural practice in Western Canada is much less definitely a profession than in England, for its commercial side is much more evident, and there appears to be no consistent scale of fees. Arrangements for architectural competitions are very primitive, and the history of some of them would show to English architects that with all the defects of the system in England, they are in a comparatively enviable position, for professional assessors are very seldom employed in the Western country. Estimating is done from specifications alone, bills of quantities not being customary; but

sometimes in the case of large public buildings a schedule of prices is prepared at the time of signing the contract. A special difficulty is that of the "lien law," which makes the owner of a building liable for all wages and material claims until the expiration of thirty days after completion, irrespective of what he may have paid to the general contractor on the architect's certificates. This, therefore, makes it necessary for the architect to satisfy himself that all workmen's wages and up-to-date accounts for materials have been paid. Again, the public are very reluctant to employ an architect; and of a list of permits containing 59 sets of plans, only 13 were prepared by architects, owners or contractors being responsible for the rest. Mr. Charlewood's correspondent knew of no town in Canada where architectural assistants were in special demand. Where there has been sudden and rapid expansion, the consequent influx of architects has resulted in some of them working as builders' labourers. In some parts of Australia, Mr. Charlewood said, there appeared to be a great dearth of efficient tradesmen; and he was afraid that in case of a building boom here a similar shortage of labour might be experienced in consequence of large numbers of skilled artisans having been compelled to leave the country during the slack period.

The remainder of Mr. Charlewood's address dealt with the possibilities of steel as what Sir William Richmond had described as "a material that will answer to æsthetic demands"; to the advocacy of covered ways in shopping centres; and to the changes in the requirements for the Institute examinations, which he thought most students would welcome.

NORTHERN COUNTIES FEDERATION OF BUILDING TRADE EMPLOYERS.

The annual general meeting of the Board of Representatives of this Federation was held at the County Hotel, Newcastle-on-Tyne, on December 14th, 1911. Mr. Fred W. Ranken, the retiring president, in the chair, when there were present 40 representatives.

The Secretary reported upon this Federation's suggestions upon the proposed alterations to clauses 20 and 28 of the National Form of Contract and the proposed form of sub-contract. This Federation's observations had been forwarded to the National Federation. The Administrative Committee of the National Federation have considered the reports received from the various County Federations, and have decided to recommend to the annual meeting of the National Federation that the proposed amendments of clauses 20 and 28 be adopted, together with the proposed form of sub-contract.

The secretary presented his annual report which dealt exhaustively with the work of the Federation.

Mr. John Proud (West Hartlepool) was elected president; Mr. W. T. Weir (Newcastle) vice-president; and Mr. J. Guthrie (Darlington) junior vice-president; Messrs. Percy Bray (Middlesbrough) and R. J. Huntley (Sunderland) honorary auditors.

A communication from the National Federation proposing to have set times for the National Conciliation Board to meet to hear appeals, together with the opposing recommendation of the Northern Counties Executive Council, were considered. The recommendation of the Executive Council was adopted.

It was agreed that the National Federation recommendation with respect to the proposed admission of builders' labourers to the conciliation scheme be supported where the builders' labourers are sufficiently organised to justify its adoption.

A report as to the position of the Insurance Bill was given by Mr. John W. White, who said that Mr. Buxton had adopted a great many of the suggestions placed before him by the National Federation in reference to the unemployment section. The Government had been approached to merge the Workmen's Compensation Act in the second portion of the Bill, but had refused to entertain the proposition.

THE NATIONAL INSURANCE ACT.

The Act of Parliament that is easily understood by the laity is indeed a rare and precious document; and the National Insurance Act is of rather more than average complexity, not because its language is specially involved or obscure, but because of its bulk and the multiplicity of its provisions. "During the six months of debate in the House of Commons, no spectacle was more frequent than that of eminent lawyers, and men of higher mental capacity who are not lawyers, confessing inability to understand the meaning and effect of this or that clause or sub-section. And there have been times when the explanations of the Chancellor of the Exchequer or the Law Officers of the Crown have made obscurities of meaning still more obscure. Beyond doubt, the process of amending the original Bill has resulted in greater clarity.

"The worst excesses of the Parliamentary draughtsmen have disappeared. There are, however, still many clauses which would give anyone but a lawyer a headache to read. Few of the fifteen millions of insured persons, and perhaps not all employers and others personally affected by the Act, would disdain a translation of the Act into a plain narrative." It is to this intent that "An Old Parliamentary Hand" has produced "A Full Explanatory Digest" of the National Insurance Act. He has closely followed the phraseology of the Act where that is sufficiently intelligible, but has not hesitated to supply a free paraphrase of involved and technical expressions. The result, so far as we can see, is not, of course, a substitute for the text of the Act, but an excellent guide to the interpretation of its meaning—a text that the ordinary man may read with understanding, and even with interest. The book should have been supplied with an index.

National Insurance Act. A Full Explanatory Digest. By "An Old Parliamentary Hand." William Macdonald and Co., 166, Fleet Street, London, E.C. Pages viii.+72. 7½ ins. by 4½ ins., price 6d.

The Quadriga for Constitution Hill.

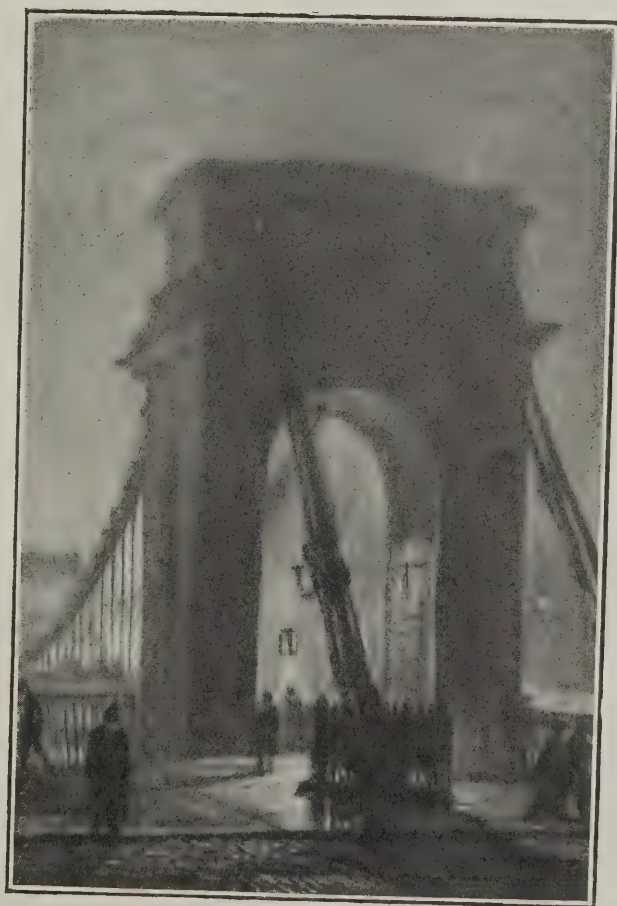
One of the first ceremonies which the King is likely to perform on his return from India will be the unveiling of Captain Adrian Jones's bronze quadriga on Burton's Arch, Constitution Hill. The work of erection is now in progress. The quadriga is between 30 ft. and 40 ft. high, and weighs nearly 40 tons. When it is in position the highest point will be 100 ft. from the ground. It is 20 years since Captain Jones first exhibited his design at the Academy. The statuary has been cast at Thames Ditton. Each of the horses weighs five tons, and the mantle of Victory which is flowing in the wind is composed of three tons of bronze.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 17th, 1912.

Volume XXXV.

No. 887.



THE SUSPENSION BRIDGE, CLYDE PLACE, GLASGOW.
DRAWN BY MUIRHEAD BONE.

Mr. Muirhead Bone is unquestionably a great architectural draughtsman. He seizes upon the commonplace and makes it the unusual, as his numerous studies of scaffolding and demolitions abundantly testify. And his rendering being so original and so delightful, it is a pleasure to have fifty such drawings of Glasgow as Messrs. James Maclehoose and Son (61, St. Vincent Street, Glasgow) have recently issued, price two guineas: one of which is reproduced above. The drawings are rendered by photogravure on tinted paper, and will be treasured by all who have an eye to discern the ability and charm they embody.



The above is now in course of erection; it is understood that when it is completed the King will unveil it. The Angel of Peace in her chariot stands on a cannon, and is surrounded by shields, helmets, standards, and other trophies of war. Her right arm is uplifted, her hand bearing a wreath of laurels, while in her left hand is an olive branch. The total height of the group is 32 ft., the total width being 36 ft., which is 10 ft. wider than the base on which the quadriga will stand. The car and the wheels are decorated with the rose, the shamrock, and the thistle, and at the hub is a lion. The total weight of the statuary is forty tons. The horses are double life-size, and weigh six tons each. The work has been cast in the foundry at Thames Ditton, the cost being borne by Lord Michelham, who is making this a gift to the nation.

QUADRIGA FOR DECIMUS BURTON'S ARCH ON CONSTITUTION HILL, LONDON.

CAPTAIN ADRIAN JONES, SCULPTOR.

THE ARCHITECTS' & BUILDERS' JOURNAL.

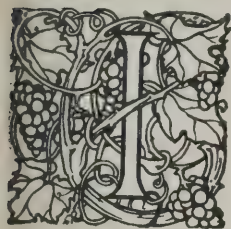
JANUARY 17th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 837.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The Renaissance of Italy, France, and England.



F we do not all learn to understand and appreciate the history and merits and defects of the architecture of the Renaissance period, it will not be for want of books on the subject, and good ones too. Two important treatises on the French Renaissance have recently passed under our notice; now we welcome a third

work, that of Professor Simpson, on the Renaissance in Italy, France, and England.*

As this is the third volume of a series dealing with the development of architecture generally, the subject is of course necessarily treated with less detail than in the books by Mr. Ward and Professor Blomfield, which dealt with French Renaissance only (and the latter only with a portion of its history), and, as it is, the author has had to limit the work by confining it to the Renaissance architecture of three countries—Italy, France, and England—in order to avoid making the volume disproportionately large for the series to which it belongs. But in fact all that is best worth attention in Renaissance architecture is centred in those three countries. German Renaissance is bad wherever it does not merely copy Italian; and Spanish Renaissance is distorted by Moorish traditions of multiplicity of ornament, except where the influence of Herrera and his school chilled it into commonplace. And even of the trio of nations selected it must be admitted that England makes a bad third; but for Inigo Jones and Wren, she would be nowhere. The real history of Renaissance architecture belongs more especially to Italy and France.

The author does not omit to recognise, at the outset, the fact that the Renaissance in Italy was by no means an entire break with architectural tradition; the Classic tradition had always more or less kept its hold on architecture in Italy, and prevented Gothic from ever attaining to that complete and grand unity of style which it developed in France and England; so that in Italy there was really no great Gothic tradition to fight against. And he does not forget to point out to his readers that the Italian Renaissance architects were not mere copyists—they were adapters, and produced a new and original architecture, though based on Classic tradition. And as he observes, the revival of a style does not make it less a "true" style unless it proves unfit for the customs or the climate where it is revived; and this was not the case in Italy; "no unsuitability resulted in a single instance or a single building of the early Renaissance." For England, of course, the position is rather different.

The use made of the columnar order on the early Renaissance buildings was one of the most important points in their design, for the question of its being a "true style" very largely turns on this. The author recognises that Florence was the real originating home of Renaissance architecture; and there, in the early palaces, no thought was present of adopting columns or pilasters as surface ornament. The

Riccardi and Quaratesi palaces, with their great cornices and their ranges of windows in the wall, were as genuine architecture as anything could be. It is really an immense step from these to such a building as the Rucellai, with its rows of equally spaced pilasters on three storeys, although they are but little separated in date. The author hardly emphasises sufficiently the architectural step which was taken when these non-constructural pilasters were introduced by Alberti. It was the beginning of the academical element in Renaissance architecture, and puts the art on a different footing. We may disapprove or condone it, but we ought to feel that it is the introduction of an entirely different principle in the treatment of architecture. This fact should have been insisted on. It is noteworthy that in Rome, even at a considerably later period, the a-stylar treatment was still retained, for the most part, in the architecture of private mansions. The Farnese palace is almost exactly a century later than the Riccardi, but it is almost as simple architecture; columns are used in the loggie of the courtyard, where they support something, not as features on the façade, except for the small colonnettes flanking the windows, and these have a function in supporting the projecting entablatures over the window heads, for each window is set within what is a small separate architectural design. That framing of the windows within an architectural border is the important difference between this and the early Italian palaces. Professor Simpson draws attention to the importance of this distinction. In the early Italian buildings the arches and jambs of the windows are part and parcel of the walling; and he quotes Vasari to



CHATEAU DE BLOIS: CORNICE OF SOUTH SIDE OF COURT.

*"A History of Architectural Development, in three volumes, Vol. III.: the Renaissance in Italy, France, and England." By F. M. Simpson, Architect. London: Longmans, Green and Co., 1911. Price 21s.

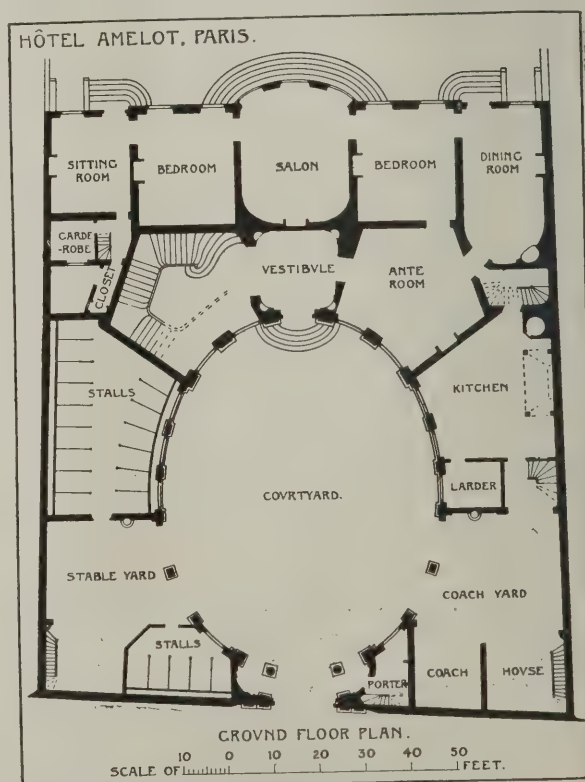


HOTEL D'ASSEZA, TOULOUSE.

the effect that the first building in Florence to which the system of an architectural framework to the windows was applied was the Palazzo Bartolini, designed by Baccio d'Angelo, who was much ridiculed for what was regarded in Florence as a new and eccentric architectural "dodge." We are so accustomed to it now that it is almost difficult to realise how the device would appear to those who saw it as a novelty. The important thing for us is to realise that the treatment of the window with or without a special architectural framework makes an immense difference in the spirit of an architectural design. The window-jamb forming an integral part of the main wall gives the building a more monumental expression, a more *built* look, so to speak; the architectural framework to the windows is a refinement, in a sense, but it is a more artificial way of building; in this respect the Farnese palace looks like the Riccardi type after a century of artificial culture. Which is the better may be a matter of opinion, but the window opened straight out of the main wall makes the more powerful architecture. While speaking of the Florentine palaces, we may note that the author draws attention to the fact that the Pitti palace, as designed and built by Brunelleschi, was not the long comparatively low façade as now appearing, but was only one-third the length, the façade having been extended on each side afterwards by Ammanati, who, however, religiously kept to the original detail. The building has been both over-praised (by Fergusson) and underrated by those who say it is more like a prison than a palace; it is somewhat too stern in its architecture, but certainly impressive for its force and simplicity. What it wants is a great strong cornice, to dominate its rugged masses of wall.

Some remarks on the treatment of windows in the Venetian palaces are worth attention. The author observes that in most Renaissance buildings elsewhere the windows are spaced either equally or irregularly. In Venice they are regular in disposition, but not spaced equally; usually some are grouped closely in the centre, and there are single windows at the side, with a good deal of wall space. Thus, as he says, "the ends frame in the central part, and the angles are strong and solid; the latter an important necessity in all buildings." The want of that, we may observe, is a defect of the Farnese palace façade; the windows come too close up to the angles.

The dome is so important a feature in Renaissance church architecture that it is quite in order to have a chapter devoted to the design and construction of Renaissance domes. The preceding chapter, on the planning of Renaissance churches, shows, in the numerous plans given, how prevalent was the adoption of the type of plan with a wide central space, as opposed to the mediæval plan with its long avenue and narrow crossing. Because the architects wanted domes, the plans must be of a type which would afford both the excuse and the structural abutment for a dome. The church of Monte Santo at Rome, like the Gothic St. Gereon at Cologne, has an elliptical nave with a straight-lined choir added, and deep chapels at the side of the nave, the dividing walls of which act as buttresses. Where the long Latin plan was employed, it was often with a wide centre avenue and a dome at the crossing, as at S. Andrea, Mantua, where the place of the aisles is supplied by a series of chapels divided by internal buttresses. Florence Cathedral, the nave of which is on the mediæval three-aisled model, was enlarged into a great octagon in place of the transepts and crossing, for the sake of an intended dome, or a wide central feature of some kind (for it may be doubted whether a dome was the intention of the original architect, the Renaissance passion for domes not having then developed). In the dome chapter a good many sections of celebrated domes are given. The difficulty always is, with a dome, to make it look equally well internally and externally. A single-cell dome which seems the right proportion internally is almost certain to look too low externally; unless, as at the Pantheon at Rome, and in some modern examples, it is frankly treated externally as a low dome which does not pretend to any soaring character; and a fine composition can be made on that principle, though it can hardly be so impressive as the lofty dome dominating everything else in a city. At S. Maria della Salute the construction is the very simple one of an interior built dome of semicircular internal section, and a timber dome built entirely outside of and unconnected with it, resting on the exterior portion of the walls of the drum. Of the domes in which a more complicated section has been used to solve the problem, the author takes five as special examples—Florence, St. Peters, the Invalides, St. Paul's, and the Panthéon. We should not, however, call the Florence dome one of the complicated examples; it is simply a built dome in two thicknesses, with solid ribs connecting the two



From "A History of Architectural Development."



THE CHATEAU DE BALLEROY.
From "A History of Architectural Development."

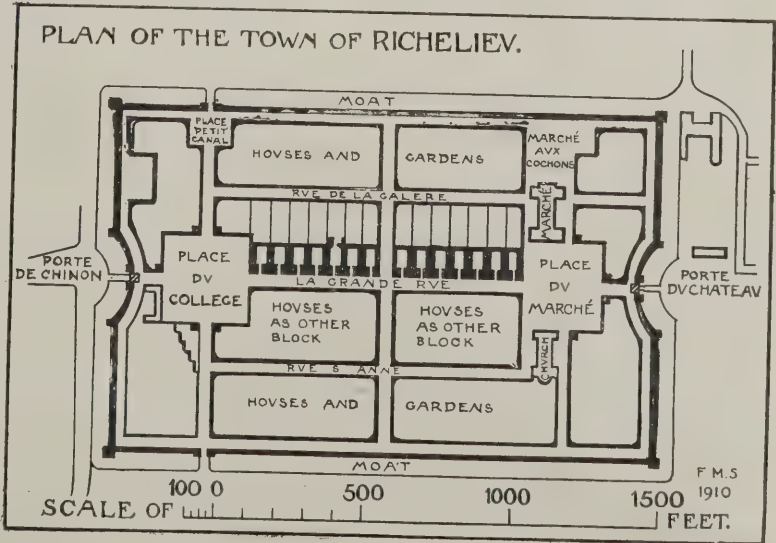
shells at intervals, and with a pointed section, in order to give better support to the lantern and less thrust at the base. It would hardly, however, be a stable construction but for the ties introduced, and is not therefore a quite satisfactory specimen of dome building in a constructional sense. It may be added that it is not a dome in the true structural sense, in consequence of its octagonal plan; and it is rather an oversight that no remark is made as to the radical structural difference between this and a true dome. In the dome on a circular plan, each ring of masonry is an arch in a horizontal sense, as soon as it is completed, and it is therefore much easier to erect with safety than a dome on an octagon plan, each face of which is a straight line.

The sections of St. Peter's, St. Paul's, and the Invalides are well known; that of the Panthéon is less familiar; the author states that it is the only triple dome in which all the domes are of stone. The lantern stands partly on the outer dome with some additional support from the middle one. The author describes the construction as daring, "almost foolhardy"; it looks so on the section, but it is not more so than some of the lofty vaults of the mediæval churches. At all events, Soufflot deserves the credit of having chosen to build a monumental dome instead of one with a sham exterior of timber construction. St. Paul's may be a more scientific construction, but it is obtained at the expense of architectural and structural truth.

The author gives a good account of the picturesque early French Renaissance, of which we have heard and read so much lately, and therefore need not enlarge on again. Part of the interest of it lies in the fact that it is so distinctively French. We reproduce the illustration of the cornice of the courtyard at Blois, showing how curiously the French altered the typical form of Italian classical cornice into a detail and proportion of their own. On the other hand, the Hôtel d'Asseza at Toulouse, of the date 1555, which is not much known, is a very charming example of early French Renaissance, showing a much more classic and Italian manner, but still with a character about it which is distinctly French. To the seventeenth century belongs that remarkable example of symmetrical town planning, though on a small scale, at Blois, in laying out the town of Richelieu,

a rebuilding of the village which was the birthplace of the great cardinal of that name, and from which he took his title.

The Château of Balleroy, which was built by the elder Mansard in the first half of the seventeenth century, is interesting as showing how the French, after liberally using the one-storeyed column order in their chateau architecture for a century, seem to have come round to the point at which the Florentine palace architects started—viz., that the order was out of place in a domestic palace, and that effect could be produced sufficiently by walls, window-grouping, and cornice. They added, however, another source of effect of their own, the use of stone quoins at the angles, relieved against a main wall of brick. This produces a very good effect; and the result is a style of building which combines the dignity of Renaissance architecture with a simple and unpretentious character suitable to a private mansion. The author does justice to the architectural genius of the French eighteenth-century architects in producing dignified and effective house planning. The plans of some of these houses, he suggests, are even better worth study than the plans of the Italian palaces; "they are nearer our own time



and our own conditions." The plan of the Hôtel Amelot, at Paris, shows how finely the architect has grouped his plan round the effective lines of a large elliptical courtyard.

It is impossible to turn to the English chapters of the work without feeling how tame and bounded is the English Renaissance architecture compared with that of Italy and France. Inigo Jones's work forms the only exception, and he never got an opportunity worthy of his genius. Even Wren seems rather prosaic in comparison with the Italian and French architects, and the author is justified in his suggestion that possibly, had Wren got to Italy, "actual contact with the ruins of Imperial Rome and the masterpieces of Bramante, Peruzzi, and Michelangelo would probably have given his style that broader bigger touch which to some extent it lacks." The author defends the upper storey of walling at St. Paul's, in which we cannot agree with him. It was an evasion of a difficulty in design, not a solving of it. What strikes one in Wren's work generally is its variety of plan and outline and a certain propriety of treatment which runs through it. But for the most part it wants the quality of greatness and breadth; in this respect Hawksmoor was more of a real architectural genius than his master; but he, like Inigo Jones, never had an adequate opportunity. We are glad to see that the author does justice to the merits of Archer's church at Westminster, a much finer work than is generally realised. Also he has a good word to say for the fine outside stone flights of steps which lead up to the entrance doors of many of the late Renaissance mansions, and for the character of most of the smaller country houses. As he says, "neither outside nor inside is there anything startling about these smaller houses. But they are delightful to live in; their proportions and details are so soothing."

The book is well and liberally illustrated, and especially to be praised for the number and comparatively large scale of the plans given, in which point it contrasts very favourably with some larger and more pretentious foreign works of the same class.

San Clemente, Rome.

SOME consternation has been caused among archaeologists, and we might say among architects also (at least among those who have any interest in the history and development of church architecture), by the news that the twelfth-century basilica church of San Clemente at Rome is in considerable danger from the effects of water in the foundations, and that the attempts to get rid of this by pumping have only proved that water finds its way in nearly as fast as it can be pumped out; and, of course, the installation of a pumping engine in continuous operation is not to be thought of in such a case, though it has been employed in the case of railway tunnels. The proposal now is to make a special tunnel to drain the water away into an ancient low-level *cloaca*, the foundations under San Clemente being lower than any of the municipal drains; one more instance of the tendency of ancient cities to rise in level from century to century. The presence of water in the foundations has prevented their inspection hitherto, and the recent investigation has shown that, even apart from the water, the foundations are not very satisfactory, being of soft tufa; and it seems probable that they will require underpinning and cementing to make the building permanently secure. The immediate need is, however, to drain away the water by the proposed new tunnel drain, which will cost about £3,000, of which amount only one-tenth has yet been subscribed, and it has apparently been decided not to commence the work until the whole sum required has been subscribed. This is prudent, no doubt, from a financial point of view; but those concerned in raising it will look rather foolish in the eyes of the world if the building collapses while they are waiting to collect the funds.

There is no set of buildings in the world more interesting, in a sense, than the basilica churches of Rome; they form the architectural link between the Pagan basilica and the Christian church, and their form of plan, the three (some-

times five) long aisles with the apse at the end, is the germ out of which the plan of the mediæval cathedral was developed. Some of them go back to quite early ages of the Christian church. San Clemente, which was built, or rather rebuilt, at the beginning of the twelfth century (not in the eleventh, as stated in the daily papers), on the site of a more ancient church, is not one of the oldest, but it is one of the finest of its class, containing a great deal of rich mosaic and inlaid marble decoration, and it is one of the few which retain the atrium which was the usual approach to the entrance end of an early Christian basilica church. A little too much has perhaps been made of the other matters of interest supposed to be included in the site, "the Mithraic temple of the second or third century, the subterranean basilica of the fourth century," etc. Ferguson says of it: "The older church has been so altered and ruined by the subsequent rebuildings that it is extremely difficult to make out its history. . . . A considerable quantity of the materials of the old church were used in the new, which tends further to confuse the chronology"; and he throws great doubt on the supposed early date of the frescoes on the walls of the lower church. But the twelfth-century church of San Clemente is valuable enough to justify every effort and expenditure in making it safe, without the enumeration of any adventitious interests.

Roman Research in Italy.

DR. ASHBY'S recent communication on archaeological research in Italy was a good deal occupied with the differences of archaeologists on little points which turn mainly on the interpretation of history. The interest of it for the general reader consisted in the fact that a new ground of exploration has been opened up at Ostia, the ancient seaport of Rome, which is expected to vie in interest with the discoveries at Pompeii. The main street has been unearthed, and the baths, which are described as having fine mosaic pavements. Probably a great deal more will be found there; but the comparison with Pompeii leads one to ask, when is the remainder of Pompeii and Herculaneum, to be uncovered? Owing to the special circumstances connected with their overthrow, by which everything was covered up just as it stood, there is no knowing what remains of ancient art and architecture are still waiting to be discovered there; and the exploration of Herculaneum has been long talked about and written about, and nothing done.

Lambeth Palace Library.

LAMBETH PALACE LIBRARY might, it would appear, receive more attention from architects than it has hitherto accorded it. Apparently it contains many books and documents that could very profitably be consulted by students and historians of the art. This impression is confirmed by notes of some entries in a small pamphlet, reprinted from "Archæologia Cantiana" on "Kentish Annals in Lambeth Library," which has been prepared by Mr. S. W. Kershaw, M.A., F.S.A., who was thirty years' librarian at Lambeth. The library contains about 1,300 volumes of MSS., and it were indeed strange if these were found to contain nothing of architectural interest; and the same may be said of the twenty-volumes of Commonwealth Surveys; while the library is doubt rich in parish registers, visitation returns, leases, and other manuscripts from which, in all probability, the architectural historian might be able to glean much matter of interest that has been possibly overlooked or unappreciated by investigators whose object was not specifically architectural. Probably any architectural student of the Kentish churches would find it well worth while to visit the library of Lambeth Palace. A few promising items from Kershaw's interesting pamphlet may be here noted. "Notitia Parochialis" comprise six volumes of return queries made in 1705, giving interesting details as to parishes and churches at that time, their condition, repair, and sim-

matters. Thirteen volumes of charters and miscellaneous documents contain many references to lands and buildings, and to the repair of sea-walls. A history, in Latin, of the Priory of St. Martin, Dover, up to 1380, looks tempting. There is also an account of the chapel at Bromley College; and a plan and drawing (1698) of the ground on which Greenwich Hospital is built might be worth inspection; while the collection that is being made of prints, drawings, and photographs of ecclesiastical and domestic architecture has been greatly enriched by the gift, in 1892, by Mr. R. C. Hussey, F.S.A., of many illustrations of Kentish antiquities. Mr. Kershaw has done well in drawing attention to a source of information upon these and cognate matters which, it is to be feared, is not so widely appreciated as it should be.

The Question of the Guildford Cottages.

THERE has been quite an extensive newspaper correspondence on the subject of the threatened demolition of six old cottages on the Farnham Road, near Guildford. It appears that a scheme for widening Farnham Road was agreed to a long time ago between the County Council and the Guildford Town Council, and the latter obtained compulsory power to purchase the cottages in question and have served the necessary notices. It seems a pity that the intention to do this was not made public at the time the decision was taken, so that there might have been time for some consideration of the position. But this is the way these things are nearly always done; a decision is taken which would involve the destruction of some old and interesting building, yet it is carefully kept close until the moment of action arrives; then the announcement of the intended demolition is sprung on the public, and objectors are told that their protests come too late, as all the arrangements are made and the authorities cannot stay their hand. "Cannot" generally, it is true, means "will not"; and that is the history of a good many cases of destruction of ancient buildings. We are disposed to think that there may be two sides to the question in this case. Judging from some published illustrations (one of which we are able to reproduce here by courtesy of the "Morning Leader") the cottages in question, though no doubt interest-

the point, and no one seems to have thought of asking it. If they are not, we do not see that they have any claim to stand. Old cottages, however picturesque, cannot be expected to last for ever and to stand in the way of improvements that are wanted. Another question which might be put, and has not been, is whether the widening of the Farnham Road at that point is really a matter, at present, of public or pressing necessity. We have known several cases where buildings of greater historical or architectural value than these cottages were threatened with demolition because the road was too narrow; the case of Croydon Almshouses was one of them; in this and other like cases it has been said that the road must absolutely be widened, that it was quite inadequate for the traffic, and so on; but when it was found that the public opinion on the matter was too strong to be neglected, the authorities gave way, and have found that they could go on very well without widening the road, after all. Public authorities are often very apt to think that a road is too narrow for the traffic, because it is narrower at one place than at others, whereas the fact may be that the other part of the road is wider than necessary. That is another question to be put in the matter; the Town Council may have determined long ago to widen the road there; but had they any good reason for it, or was it merely because the road was narrower at one part than another? Unless there is a real and proved necessity to widen the road, why not leave it alone for the present? The cottages cannot last for ever; and when they become too dilapidated to live in it will be time enough to remove them and to alter the road boundaries.

The dispute on the matter reminds one of the recommendations in the London Traffic Report, which we noticed the other day, that a building line for main roads ought to be determined as soon as possible. We should then know what houses or cottages on a main road would have eventually to be condemned, instead of the disclosure being left to crop up in an unexpected manner, creating differences. And it also suggests a consideration applying to all such cases; that the preservation of ancient houses ought to depend a good deal on their sanitary condition, which is seldom mentioned or thought of. There has been some severe criticism, for instance, on the authorities of Rouen, on account of their avowed wish to pull down and rebuild some of the picturesque old streets of the town; and to people at a distance it seems a most stupid piece of vandalism to suggest it. But walk through those streets, and see the dirty condition of some of these old buildings, with the smells of centuries soaked into them, and it will be difficult to conclude that the city authorities were not in the right in wishing to clear them away. No one loves old and picturesque buildings more than we do; but the health of town and country is even more important than picturesque-ness. Old buildings, after all, cannot last for eternity, and it is possible to worship them to an unreasonable extent.

The London Museum.

ONE of the first results of the attempt to found a museum of London antiquities seems to be, according to a letter in the "Times" by Sir Francis Laking, the keeper of the museum, the discovery, or at least the suspicion, that the history of London as the capital of England is not so continuous as has been supposed. He points out that the finds of Roman remains in London are not nearly so important as those of Colchester and York, and that the conclusion is that there was a considerable period during Roman rule when London was not so important a centre as those two cities. However, this does not in any way lessen the desirability of founding and maintaining a special museum of London antiquities; the history of the city is long enough, and its pre-eminence in later centuries important enough, to render an historical museum of everything connected with it an undertaking of the greatest interest. No one who has been through the contents of the Carnavalet Museum at Paris, where everything bearing on the history of that city is collected and classified, but must have wondered why no similar establishment has been started in London. And when the London



ing as relics of the past, are not very picturesque or interesting otherwise, and we should like to know, before taking sides, whether these cottages are good dwellings in a sanitary sense, wholesome and comfortable to live in. We should be rather inclined to doubt this, judging from the appearance of their exterior; and if they are not, what is the use of prolonging their existence, and leaving them to stand in the way of a public improvement? No correspondent on the subject in the daily papers has said anything about that; we hear only of their appearance externally, and that their removal will take away a certain element in the old-world charm of Guildford. That is no doubt the case; but the question—"Are they healthy dwellings?" is still more to

Museum is once fairly in being and adequately housed, it is to be hoped that one of the first steps to be taken in regard to it will be to extract the magnificent Crace Collection of plans and views of old London from the recesses of the British Museum, and once more to display them all publicly and collectively where the history they embody can be studied by every one. For some two or three years this collection was on open exhibition in the now destroyed galleries on the west side of Exhibition Road, and few studies could be of more interest than to follow out, in this chronological array of maps, the changes and developments of London during the last three and a half centuries. Now the whole collection is buried in the Print Room of the British Museum, where few people but professed archaeologists know of its existence, and even they can only study the contents piecemeal in successive portfolios. There could not be a greater mistake than to hide such a collection from public view; and if, as we presume, an Act of Parliament would be necessary to compel its cession by the British Museum, it would be legislation well employed, provided that the necessary space for its complete exhibition were first secured; for it is in its complete exhibition as a whole that its real value consists. That would mean a great expanse of wall, no doubt, and the possibility of doing it depends upon the building in which the exhibition is finally housed. What the Paris municipality did was to purchase a large ancient mansion (once Madame de Sevigné's) and gradually to acquire land and house property round it, and either erect additional buildings, or throw existing ones into connection with the central building. It may be worth while to consider whether there is any large building in London the original uses of which have so far lapsed that it might be acquired for this purpose. It would be better, of course, to have a new building planned and erected for the purpose, but we should probably have to wait a long time for that.

Carnarvon Castle.

WE hear with some consternation that the Office of Works are contemplating laying their hands on Carnarvon Castle and introducing rebuilding and restoration there. The report may be untrue or exaggerated; we should have difficulty in believing that the Office of Works seriously intended anything that could be called restoration, in view of the prevailing feeling of to-day on that subject; but any such proposals should be decisively resisted. Surely the case of Pierrefonds is warning enough.

The American Institute of Architects.

FROM a leading article in a recent issue of the "American Architect" we gather that there has been some difference of opinion as to the action taken by the committee of the Institute dealing with infractions of the code as to unprofessional practices. We gather that their report, including censure of some members by name who were considered to have been guilty of unprofessional practices, was read in an open session of the recent Convention, at what we presume was practically a public meeting. Such a course certainly seems to argue rather more zeal than discretion. In the first place a man accused of unprofessional practices may have a valid defence; the facts may have been wrongly stated, or he may have an excuse which does not appear on the face of the facts; but the public who get to know that he has been censured by his representative professional body will remember that fact and probably not remember his defence. In the Institute of British Architects any charge of unprofessional conduct that may be brought against a member is considered in private, and the offending member privately communicated with; if he has a sufficient explanation to give he has not then been injured by any public reference to his name. If he continued in his evil courses he might bring the Council to the point of

expelling him from the body, but this, if it came to pass, would probably be done by an announcement that he had ceased to be a member under the provisions of a certain by-law named. In fact, in England we believe anything like a public accusation of a member, if afterwards successfully answered, would give him the right to an action for libel. It is quite right that a representative body should act decisively in rebuking, or if necessary, in punishing unprofessional conduct; but the charge and investigation should at least be kept private in the first instance.

Spoiling the Thames.

THE spread of London means inevitably the Cockneyising of the Thames and the intrusion of the builder and the engineer. It is not many years since Richmond was quite apart from the metropolis, but it now no longer is; and the developments have brought the usual disturbing elements in their train. A great effort was made some years ago to preserve the celebrated view from the Terrace, and the Marble Hill Estate was then saved from the clutches of the builder, and preserved for all time. But a little further up the river a grit company started operations, and have effectually disturbed the peaceful serenity of that portion of the reach. And that is not the whole of the business, for a scheme to cut through the footpath in order to form a channel to a small dock has only quite recently been sent back for reconsideration, and a similar stop has been set against a later scheme for erecting a footbridge—possibly a road bridge—across the river at Twickenham, for the purpose of connecting up with the small village of Ham. With the steady growth of æsthetic perception, and the increasing recognition of the direct and indirect pleasures and profits of urban amenities, the objection to unnecessary "improvements" has now more force than heretofore. Both schemes, in our opinion, are wholly undesirable, and we hope that the opposition now being raised will prevent their ever being carried out.

The Burlington Fine Arts Club.

THE collection of early Venetian paintings at the Burlington Fine Arts Club is intended, we are told, especially to illustrate the works of Giovanni Bellini and his school, which culminated in his great pupil Giorgione. There are, however, three examples of Carlo Crivelli, the most representative artist of the school of Venetian painting which was a legacy of Byzantine art; by far the best of these is that numbered 4, in which the figures are much superior in line and design to the other two; all have the same rich decorative effect in costumes and accessories. In some of the other works of this semi-Byzantine school, by Vivarini and Vittore Crivelli, it is curious to notice the mixture of absolutely realistic festoons of fruit, etc., along with the rigidly conventional style of the rest of the decorative detail, showing that the painters of these pictures had no sort of principle to guide them; they could not see that their own naturalistic details and those of the stiff Byzantine type were utterly incongruous. Of the Giorgione pictures exhibited the largest is the Adoration of the Shepherds, lent by Lord Allendale, which has not been exhibited for many years, but the most beautiful is the small Holy Family picture belonging to Mr. R. H. Benson, which was bought for £5 out of a curiosity shop at Brighton some five-and-twenty years ago. We presume it is genuine; it is at all events beautiful enough to be so. Among the furniture objects exhibited is a seventeenth-century cabinet, supposed to be of Arab manufacture encrusted with pearl shell in a diaper design of scrolls, a very interesting piece of work. Two mahogany arm-chairs with boldly designed strapwork backs, on each side of the fireplace, are also worth the attention of architect who design furniture. The exhibition is not, of course public, but entrance is readily accorded by the Committee to persons interested in art.

WHAT IS WANTED IN THE BUILDING TRADES.—II.

IN the first article, published in our issue for last week, want of professional knowledge was suggested as the probable reason why the building trade has so high a percentage of failures. It was hinted also that the professional qualifications of architects and surveyors and builders were probably hardly adequate to the need of the time.

The interest which is being taken by architects and surveyors in the education and examination of aspirants to those professions, and the way they are seeking ever to extend their powers and to increase their numbers—to the end that ultimately the standing of those professions shall be as well guarded as that of any other profession—shows that the needs of the situation are realised by them.

But it can hardly be said that the movement has yet made itself felt among builders to any extent, although it would seem that the time is ripe for the Institute of Builders to undertake a scheme of development of the professional side for builders, which should complement the forward movement now in progress in the sister professions, so as to enable the master builder to respond adequately to the higher technical and professional requirements which are being demanded of him already and will be still more required in the near future.

As was shown in the first article, want of professional knowledge is probably responsible for most of the evils from which builders suffer; and there can be no question but that the more loyal and high-minded a builder is in the conduct of his business the more injury he is likely to sustain from the heedless and unprincipled competition of men who are ignorant of the principles upon which legitimate competition is based. It would seem high time, therefore, that the best elements of the trade combined to save the situation.

Building a Profession in Germany.

It may prove helpful to the consideration of this question if a short sketch is given of the way the professional standing of builders and architects is recognised and provided for in Germany.

One of the best features of the old guilds was the care they took that no one should enter the businesses of which they were the governing bodies except by the way of apprenticeship, journeymanhood, and mastership, in accordance with the rules relating thereto, and after examination to test the knowledge and ability of the aspirant. With the decay of the guild system these regulations disappeared generally throughout Europe, but the guild spirit seems to have survived in Germany to a greater extent than elsewhere, for in no part of Europe are the profession of the architect and the business of the builder more completely recognised and better prepared for than in Germany. In that country the building trade is regarded as a whole organism, and the right to practise in it is guarded from top to bottom.

Beginning with the architect and the master builder, the law of May 30th, 1908, and October 1st, 1908, provides that:

"The right to bear the title of master in connection with a trade sign which purports practical capacity in building work, in especial the titles of architect and master builder, will be regulated by the Federal Council. Until the regulation of the Federal Council comes into force such a title may only be borne if the State Government has prescribed rules governing the right to bear it, and only by those persons named in such prescription.

"The Federal Council may prescribe further regulations as to the bearing of the title of master in connection with other trades which imply the possession of craftsmanship in those who profess them."

Rules had been prescribed in Saxony in regard to the title of architect in 1903, and, in regard to builders, rules were already prescribed in Wurtemberg conferring the

title of master builder on those who acquitted themselves satisfactorily in the State Building Schools at Stuttgart. Regulations were also prescribed in Sachsen-Altenberg and Reuss in Lauenburg for the protection of the titles of architect and master builder.

In Prussia and the other States of the German Federation such regulations did not then exist, and from the passing of the law of 1908, therefore, the assumption in them of either of the titles of architect or master builder is forbidden under penalty. In the same way the illegal assumption of the title of master in connection with any handicraft trade (e.g., mason, joiner, etc.) is forbidden under penalty.

Prior to the passing of this law, the title of master was regulated in regard to a handicraft trade by the law of 1897, which provided that:—

"The title of master in combination with the sign of a handicraft dare only be assumed by craftsmen if they had acquired the right to train apprentices in their profession and had passed the test examination for mastership."

The law of 1908 modifies this to the effect that the right to train apprentices will henceforth only belong to those who have both passed the master test in their handicraft and attained the age of twenty-four years.

Of course, those who already enjoyed the title of master prior to the passing of the law of 1908 retain the title.

Since 1901 the possession of a test by a guild was not sufficient in itself to confer the right to the title of master of a handicraft: it only conferred the right to call oneself "guild master of such and such a guild."

It will be noted that these regulations related to individual trades, but did not deal with the whole building trade until the law of 1908.

Commenting on the effect of the law of 1908, the Year Book of the German Institute of Builders says:—"The custom by which persons who dare not call themselves master masons or master joiners, and so on, simply call themselves master builder or architect, must now come to an end. The Federated Guild of the German Master Builders can now boldly undertake for itself the duty of having that custom forthwith abolished.

Before proceeding to refer to the master tests and other details of the German system, attention may be drawn to the evidence the older law affords that the right to train apprentices was esteemed to be one worthy to be jealously guarded, and not lightly conferred. Probably this was done by the State in the interest of the apprentice, but it must have been based upon a desire on the part of masters to have apprentices.

Compare this feeling with the indifference in this country in regard to apprentices, and one can hardly escape the suspicion that this may be the cause of our backwardness in technical training as compared with Germany.

(Concluding article will appear next week.)

With reference to last week's article on this subject, we have received the following communication from a prominent London master builder who prefers to remain anonymous:—

My views on this subject are as follows: What is wanted in the building trade is very clear. It is *builders*, and not scheming financial agents. Many large buildings are now carried out by *agents* calling themselves *builders*, sub-letting everything, and owning no yard or plant. Some builders have been supplanted by these agents. Some builders (and good ones, too) have become agents themselves.

It is not the builder that requires education—it is the public; for, living in the days of shoddy as we do, as long as a building is slapped up quickly, and with plenty of glue and varnish, the public (not the architect) are quite satisfied, for they know no better.

In my opinion the following may save the trade from the distressing way in which it is now carried on. The architect should insist that everything possible should be done by the builder, by his own men on the job and at his works. He should not nominate sub-contractors, neither should he allow the builder to employ any.

The old system of apprenticeship should be reverted to

The officials of the men's unions and the officials of the Workshop Act should pay more attention to those making goods for buildings, for many of the latter sweat their men and allow them to work in unhealthy and dangerous premises.

PARIS APARTMENT HOUSES.

LONDONERS, if they can help it, do not live in the midst of their business; they regard the metropolis as a wonderful place to work in, but one nevertheless which it is highly desirable to get out of after business hours. Hence the general exodus every evening to the suburbs, where the bulk of people desire to have a small house. Parisians, on the contrary, belong to Paris, body and soul; they love to work in it and to find their recreation in the midst of it; and as the small house is, for obvious reasons, an impossibility in such surroundings, there have arisen the thousands of apartment houses, each embracing its complement of flats. One might expect to find, therefore, the ideal flat in Paris, but to do so it is first necessary to be a Parisian, with a Parisian's taste and outlook; and in studying a few plans of such buildings, it is well therefore to forget that there are some things which our Building Acts would never allow, but which are taken as a matter of course in Paris; as, for example, the enclosed w.c., with no window, or with one opening on to the interior of the house.

As an example, we may offer the apartment house completed not long ago at the corner of the Rue Grenelle and the Rue St. Simon from designs by M. Deglane, who is well known as patron of an atelier, and especially as architect of the Grand Palais. This block of flats is situated in the midst of the severely aristocratic Faubourg St. Germain, the quarter occupied by the exclusive families of the old French nobility. The streets here are narrow, and



APARTMENT HOUSE, RUE GRENELLE AND RUE ST. SIMON
PARIS. M. DEGLANE, ARCHITECT.

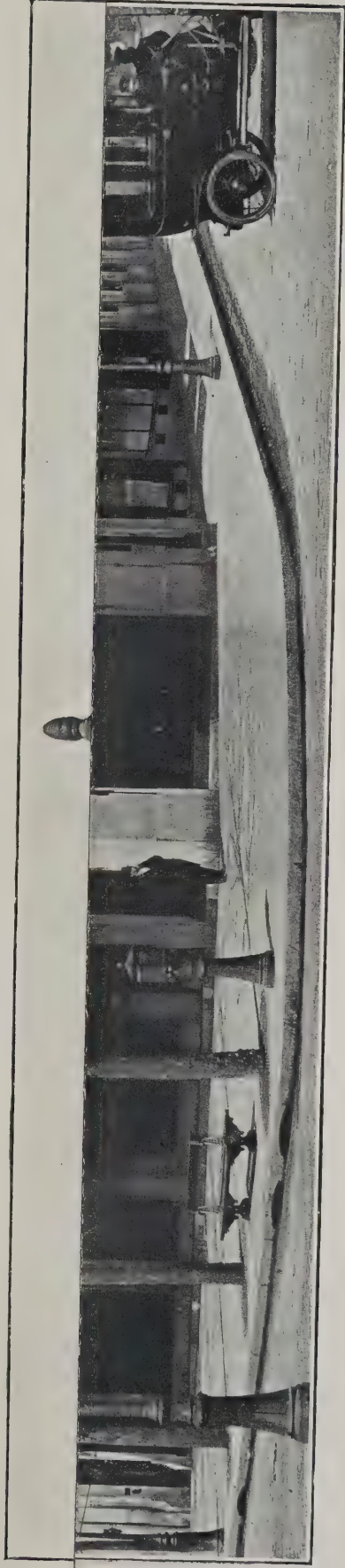


APARTMENT HOUSE, PLACE ST-FERDINAND AND RUE BRUNEL,
PARIS. H. DUPONT, ARCHITECT.

the forecourts enclosed by high walls and massive doors, beyond which rise façades so dignified as to be almost forbidding. Classic old friends from César Daly greet us on every hand, and a sense of well-being, of quiet and repose, stamps the region as one of true refinement. The financial condition of many of the younger branches of these old families, however, does not permit them to occupy their old houses, though their social life demands that they remain in the neighbourhood. They can only afford a moderate rent, yet their taste and training demand a certain restrained luxury of architectural treatment. M. Deglane's problem, therefore, was to fulfil such requirements on a corner site measuring 75 ft. by 45 ft., and he has solved it by arranging two suites, each of six rooms, on every floor. The plan, granting the habits of French family life, is well arranged, and the available space ingeniously disposed; it is, indeed, exceptional from the French standpoint, by reason of the fact that there is a bath-room provided in each suite, and even a w.c. divided off from the bath-room, though, as indicated above, the placing of this is hardly in keeping with English practice. The "toilettes" serve as dressing-rooms. The staircases entrance and vestibule come in the middle of the south side, the concierge's rooms being arranged to the right of the stairs, and the rest of the space on either side of the entrance being utilised, in the manner customary (even in some of the most expensive Parisian apartment houses) by small shops.

Turning to the exterior, we find material for admiration and also for reflection. The ground-floor storey is carried out in a good hard white limestone, as also the sills and course

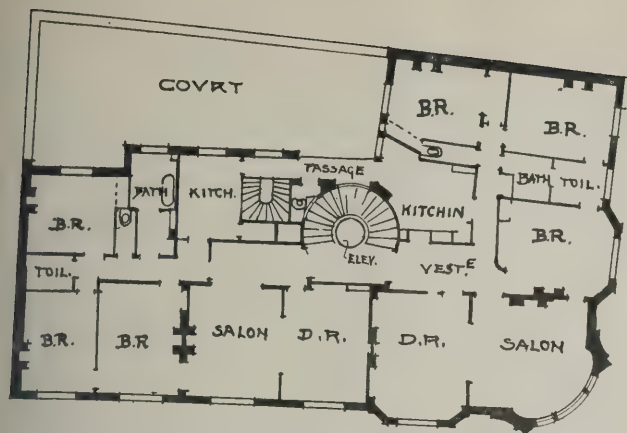
Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, January 17th, 1912.



APARTMENT HOUSE, BOULEVARD HAUSSMANN AND RUE DE COURCELLES, PARIS. CHARLES LEFEBVRE, ARCHITECT.



APARTMENT HOUSE, BOULEVARD HAUSSMANN AND RUE DE COURCELLES, PARIS. CHARLES LEFEBVRE, ARCHITECT.



APARTMENT HOUSE, RUE GRENELLE AND RUE ST. SIMON,
PARIS: TYPICAL FLOOR PLAN. M. DEGLANE, ARCHITECT.

above, while for the carved portions a warm buff limestone is used. The brickwork is red in colour, the bricks being laid Flemish bond in white mortar with well-raked joints; except on the top storey, where red mortar has been employed. On the whole we are impressed by the dignity of the building, which, with its bow windows at the corner, carried up through five floors, is satisfying. Yet, though it is the work of an architect of such repute as M. Deglane, we cannot help being astonished at such vagaries as the carved heads below the window sills, the swelling corbels, the exuberance of the carving and ironwork, which exhibits a freedom associated with *art nouveau* rather than with the architecture of a country which boasts the traditions of the Ecole des Beaux-Arts. It is to be noted also how the design seems to go to pieces at roof-level, a defect frequently the case in modern French work even in buildings which are really admirable in the lower storeys. It is expected of us always to be ready with eulogy when French civic architecture is mentioned, but a keen perception of faults in our own work forces on our attention faults like those we have noticed above. That modern French architecture is based on sound tradition, and that Paris offers us abundance of good examples, we do not deny, but all the buildings are not by any means perfect, and it is as well to comment on their deficiencies.

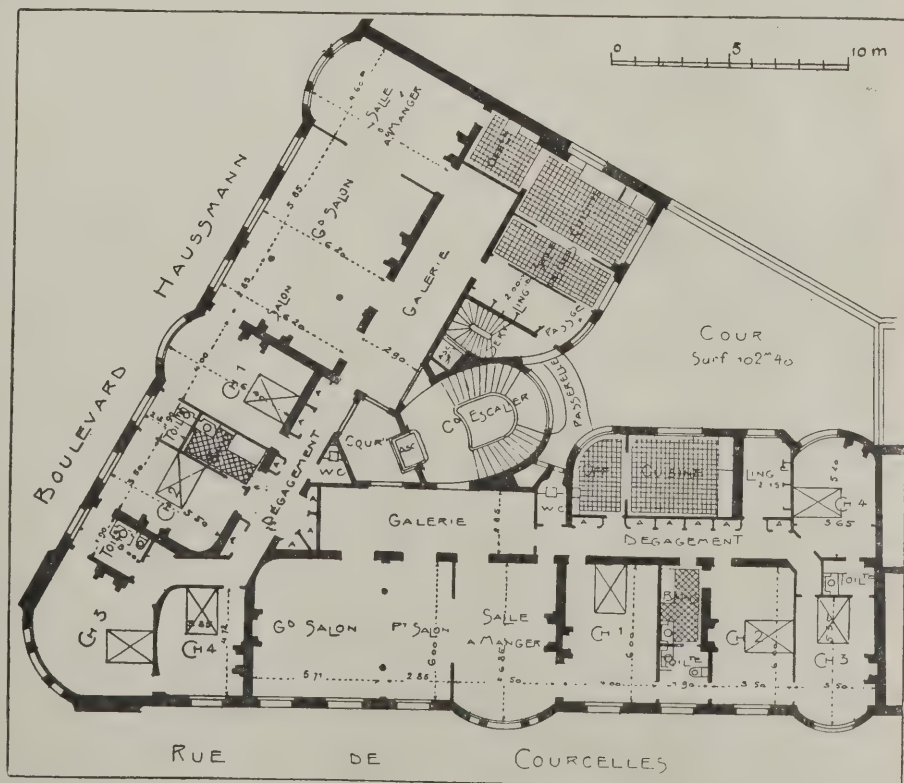
Similar observations might be made in the case of another Paris apartment house here illustrated, that at the corner of the Place St.-Ferdinand and the Rue Brunel, by M. Dupont. This building, however, is more in what is usually considered to be the modern French Classic manner; it is, indeed, a very well-designed building, and planned with great care. In Paris it has become customary to monopolise the best position for the reception-rooms, to the detriment of the bedrooms, thus rendering these comfortless in the daytime. M. Dupont has broken with this bad habit, and, profiting by the shape of the site, has arranged his rooms admirably. The bedrooms, of which there are three in each flat, all face on to the Place St.-Ferdinand, and the drawing-room and morning-room both overlook the Rue Brunel, whilst the dining-room, which is the least used, is lighted from the area at the rear. A large hall connects the front staircase, the dining-room, drawing-room, morning-room, bedrooms, and pantry, the last-named forming the connection between the dining-room and the kitchen. Each flat has a bathroom, two w.c.'s, a back staircase, lift, and parcel lift. The position of the main staircase has been placed where it is, next the party wall, in accordance with the desires of the owner, as it is possible that another building will be added on this side, and the staircase would then be central.



APARTMENT HOUSE, PLACE ST.-FERDINAND AND RUE
BRUNEL, PARIS: TYPICAL FLOOR PLAN.

H. DUPONT, ARCHITECT.

As a third example, and an excellent one, we give as the Centre Plate in this issue the apartment house at the corner of the Boulevard Haussmann and the Rue de Courcelles, Paris, which illustration we reproduce from our contemporary "L'Architecte." This building, faced with stone, is a very good specimen of the best modern architecture in Paris, and the architect, M. Lefebvre, is to be congratulated on the result he has achieved. It masses up well, the dome at the corner being especially successful in treatment, and the details throughout—in the ironwork balustrades and the stone carving—most refined.



APARTMENT HOUSE, BOULEVARD HAUSSMANN AND RUE DE COURCELLES, PARIS
TYPICAL FLOOR PLAN. CH. LEFEBVRE, ARCHITECT.

R.I.B.A. EXAMINATIONS.

The Final: Alternative Scheme of Testimonies of Study.

The alternative Scheme of Testimonies of Study for the Final Examination will come into operation at the option of the candidates in November next, and after the end of the year 1913 the existing Testimonies of Study for this Examination will be abolished. Six alternative Problems in Design will be set by the Board of Architectural Education each year, and candidates for the Final Examination must submit designs in answer to at least four of these Problems. These alternative problems will be published twice a year, three sets in *January* and three in *July*. This is done for the convenience of candidates, but it must be distinctly understood that the time for sending in the designs in answer to these problems is strictly limited. Thus the designs for Subject I. must be sent in to the Secretary R.I.B.A. or to the Secretary of the Allied Society for the district in which the candidate is working by 29th February, 1912; those for Subject II. by 30th April, and those for Subject III. by 30th June. (This time will be extended for students in the Colonies; see dates following list of subjects below.)

The drawings to be on imperial sheets.

The Subjects for the first half of the year 1912 are as follows:—

Subject I.

(a) A large Monument, to commemorate King Alfred's refounding of London one thousand years ago, for a public place in the City, not to cover more than 500 superficial feet.

All drawings to be $\frac{1}{2}$ inch scale and shaded.

(b) A Terrace of Five Houses 20 feet frontage, each six storeys high, including basement, facing the parade of a small watering place. Detailed construction of one house to be given and a design for the complete terrace.

Drawings required to be $\frac{1}{8}$ inch and $\frac{1}{2}$ inch scale.

Subject II.

(a) A large Monument to an Explorer, to be placed against the wall of a public building.

Shaded drawings required to be $\frac{1}{2}$ inch scale.

(b) A Cloister with external entrance gateway or tower to a collegiate building round a courtyard 100 feet square.

Drawings to be $\frac{1}{8}$ inch scale, with $\frac{1}{2}$ inch details of the complete construction of one bay.

Subject III.

(a) A Detached Ballroom to a large country house, to be connected with the house by a covered way. The decorations should be specially considered.

Shaded drawings to $\frac{1}{2}$ inch scale showing both interior and exterior, and a detail of decorations.

(b) A Landing Stage to a river or lake with a restaurant.

Drawings to show complete construction $\frac{1}{8}$ inch scale and $\frac{1}{2}$ inch.

Dates for Submission of Designs in 1912.

	Subject I.	Subject II.	Subject III.
United Kingdom	29th Feb.	30th April	30th June
Johannesburg	30th April	30th June	31st Aug.
Melbourne	31st May	31st July	30th Sept.
Sydney	31st May	31st July	30th Sept.
Toronto	31st March	31st May	31st July

The Subject of Construction and Shoring: Memorandum to Masters of Architectural Schools.

The Board of Architectural Education have received a communication from the

examiners to the effect that many of the candidates at recent examinations have shown weakness in the subject of construction generally, and shoring in particular. They would therefore direct the attention of the masters of the architectural schools to the importance of impressing on their students the necessity of studying more carefully this important branch of architectural education.

SOUTHWARK CATHEDRAL.

A committee is being formed to consider, and, if possible, carry out, the suggestion that the warehouses and other buildings blocking the view of Southwark Cathedral from the river should be swept away to make room for an embankment and public garden. Mr. Henderson-Livesey's letter, in which the suggestion was originally made, has been warmly endorsed by the Bishop of Southwark, and also by Archdeacon Taylor. The Bishop has now consented to take the chairmanship of the committee.

The land and buildings lying north of the Cathedral and fronting on the river are assessed at £9,428. Including the bank and hotel and offices fronting on the approach to London Bridge, the total is £13,995, or, in round figures, £14,000. At 30 years' purchase, with 10 per cent. added for compulsory expropriation, the price would come to about £462,000, or £311,124 without the buildings on the bridge approach. Another large sum would have to be added as compensation to the dispossessed traders. The actual cost of clearing the site and building the embankment would be small by comparison. But this whole question of cost will, of course, be gone into thoroughly by the committee at the outset.

LONDON'S ROMAN ROADS.

Mr. Reginald A. Smith, of the British Museum, in a lecture delivered last week to the members of the British Archaeological Association on "The Roman Roads Through London," said that he had to advance the propositions that the Romans buried their dead (sometimes after cremation) by preference along their main roads, and that they were great road builders, preferring straight lines shown by fire signals at night. In London the course of Roman streets did not agree with any that we knew now, and he had given up almost as hopeless the task of attempting to trace them. The archaeologists took no notice of the burials, which were the key to the whole position.

One of these Roman roads crossed Shooter's Hill, grazed the river at Deptford, and shot across the Thames at Westminster to Hyde Park Corner. Another Roman way ran down Edgware Road, and joined the line at Hyde Park Corner, which he believed to have been a milestone in our history for generations. There was another line from Edmonton, which crossed between the Tower and the modern Customs House; while yet another came from Stratford and Old Ford to Holborn Bridge. There was also a road starting from the present site of King William's statue, and proceeding by way of Ludgate Hill to Hyde Park Corner, and thence to Brentford, where Julius Cæsar crossed the Thames at the first piece of gravel bottom in the river.

Along these routes there had been found many signs of Roman burials. One of these burial places was under Messrs.

W. H. Smith's premises in the Strand, another under the steps of St. Martin's-in-the-Fields, and another where the statue of King George III. stood in Cockspur Street. On modern evidence, he could not be accused of absurdity if he said that there was a ford at London Bridge. The bridge at Westminster was the objective of the road called Watling Street, in Kent, and there were signs of burials on this route also.

Until 1822 there was visible near the Marble Arch a stone where deserters from the Army were shot. It was their privilege to be put to death just inside the Park wall, but ordinary criminals were hanged at Tyburn. This stone, he believed, was a Roman milestone, which marked the crossing of two Roman roads. It corresponded with the London Stone in Cannon Street; it also stood at the angle of two Roman roads. A space of 155 acres in the centre of Roman London showed no traces of burials whatever. This camp was the first London resting place for soldiers marching to the front, and when they ceased to do so it was taken over by the civil population.

ENQUIRIES ANSWERED.

The Architect and the Penalty Clause.

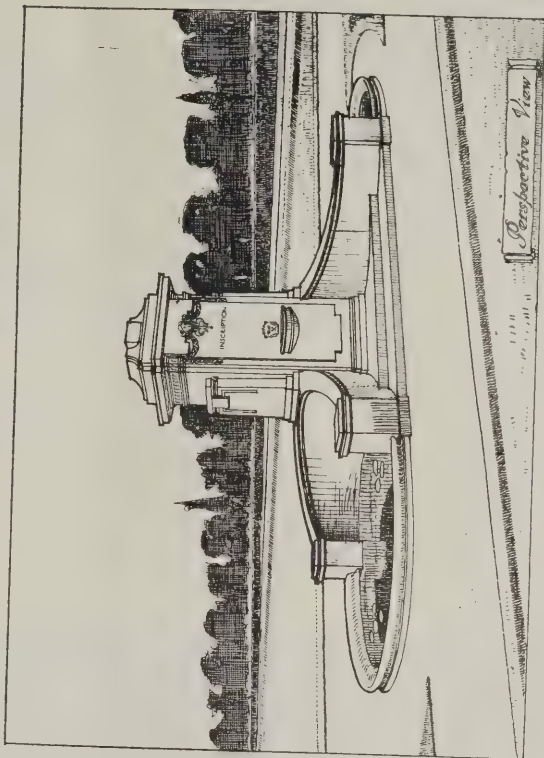
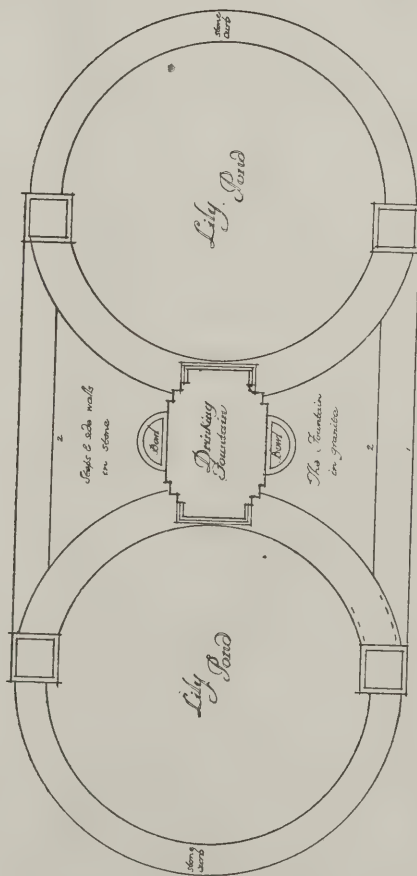
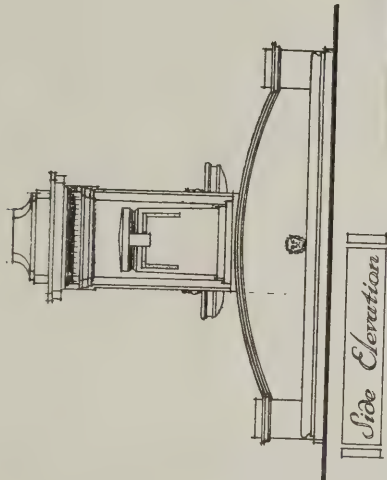
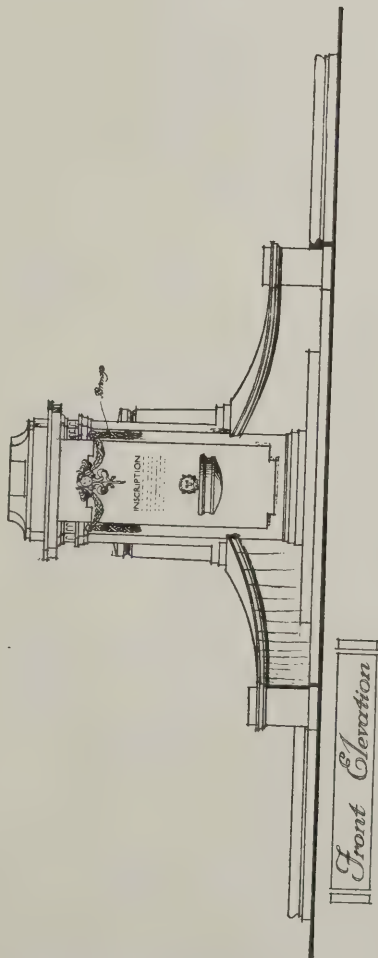
With reference to the enquiry of A. C. H., in last week's issue of the "Architects' and Builders' Journal," as it is apparent that the question of the extension of time is only being dealt with by the architect at the time of settling the accounts for the completed work, it is highly probable that the penalty clause is thereby rendered null and void; see the recent arbitration case of Porteous v. the Trustees of Saltburn New Primitive Methodist Church and Schools, where Mr. John Simpson, F.R.I.B.A., was the arbitrator, and the decision went in favour of the builder, who was resisting a claim for penalty for non-completion within the stipulated time. Copies of a pamphlet containing the arguments may be obtained from Messrs. Ritson and Hope, 14, Noriolk Street, Sunderland. The arguments are too long to cite here, but one of the grounds of defence alleged by the builder was that the architect not having made an extension of time according to the contract, it could no longer be in his power to say, after the completion, whether the builder should have had more or less time within which to complete his job.

A. G. W.

MEMORIAL DRINKING FOUNTAIN,
WALLSEND-ON-TYNE.

The design for a memorial drinking fountain in a public park at Wallsend-on-Tyne, illustrated on the opposite page, by Messrs. Simpson and Lawson architects, of Newcastle, was selected in the recent competition which was instituted among local architects. The memorial is to be erected to the memory of the late Ald. Joseph Duffy, ex-Mayor of Wallsend, and embodies a granite drinking fountain with inscription panels and drinking bowls on two sides, and a circular lily pond at each side which would be fed by the waste from the drinking fountain. Circular ornamental flower beds with grass borders may, however, be substituted for the ponds. It is proposed to construct the fountain proper of red granite, with the wing walls of red Closeburn stone, the decorations and fitting being of bronze. The inscription panel and drinking bowls would be polished.

PROPOSED DRINKING FOUNTAIN to be erected in WALLSEND PARK



Simpson & Lawson
Architects
Newcastle 1/11

SELECTED DESIGN. SIMPSON AND LAWSON, ARCHITECTS.

THE ARCHITECTURAL ASSOCIATION.

Visit to St. Paul's High School for Girls.

The first of the spring visits arranged by the Architectural Association for this year took place on Saturday, January 5th, when, in spite of the rain, many members availed themselves of the opportunity to visit the St. Paul's High School for Girls, at Brook Green, Hammersmith, designed by Mr. Gerald C. Horsley, F.R.I.B.A.

Mr. Horsley himself was present, and accompanied the members round the building. He also provided a set of working drawings and many photographs of the building, all of which were shown in the central hall.

The school, which was built in 1901-2, was erected for the governors of the St. Paul's School for Boys, which was founded by Dean Colet in the sixteenth century.

The new school was designed to accommodate at least 400 students, and is of the secondary school type of high school.

The main portion of the building has a basement, ground, first, and top floor, and extending on either side are the science wing and the library wing, with a

basement and ground floor only. The school is an example of the modern system of school planning, the class-rooms opening out of a central hall, while corridor and passage space is, as far as possible, economised.

The main entrance is not used by the students, who have a separate entrance in the basement on the west side of the building, with cloak-rooms and lavatories adjoining. The dining hall, covered playground for use in wet weather, caretaker's rooms, swimming bath, and gymnasium are in the basement also. The gymnasium, which is at the south-east corner of the site, has a floor level several feet below the remainder of the basement, to prevent the roof from obstructing the light of the class-rooms in the main building. On the ground floor level at the north end there is a gallery for the use of spectators at displays.

The swimming bath is at the south-west corner of the site, and was erected to the designs of Mr. A. Saxon Snell, F.R.I.B.A., F.R.San.I., and is 30 ft. by 70 ft., and the tank is some feet above the level of the ground.

The students' staircase to the ground floor lands in the entrance hall, from

both sides of which the first and second floor staircase ascends. The staircase throughout is in oak, with a wrought-iron balustrade and bronze wreath enrichments. The head-mistress's room and the porter's room open from the sides of the entrance hall; and the corridors between the science block and the library block, parallel to the front of the building, form one end of the entrance hall.

The corridor is 14 ft. wide, and is paved with black and white and coloured marbles. The walls are oak-panelled, and the ceiling is vaulted.

A glazed screen separates the central hall from the corridor. The central hall is Renaissance in style, and is barrel-vaulted. A gallery runs on two sides and at the north end, and is supported by Ionic columns of oak. A large organ is situated at the south end, the carving of which, together with the screen and desk adjacent, was executed by Messrs. Aumonier.

Other enrichments on the galleries were carved by the same firm. The hall is lit by circular windows on the two sides and large circular-headed windows on each side of the organ at the south end. The roof is supported by steel



PAUL'S HIGH SCHOOL FOR GIRLS, HAMMERSMITH, LONDON: ENTRANCE CORRIDOR. GERALD C. HORSLEY, F.R.I.B.A., ARCHITECT

principals, which are hidden by the vaulting.

The class-rooms open out from each side of the hall, both on ground and first floors, and are separated from the hall by a glazed screen, which is found to be an effective sound-deadener as between the classes. These rooms are ventilated by flues connected to exhaust fans in the roof.

At the east end of the corridor is the science block, comprising a lecture room and physics and chemistry laboratories; at the west end, the library block, with a museum and a school and teachers' libraries.

The remainder of the ground floor between the porter's room and the science block is occupied by music-rooms, which are found to be unsatisfactory, as the sound of the practising interferes with the other classes. These are to be abolished, and a separate music school is to be erected on the west side of the building during the coming year.

The first floor has class-rooms similar to and over the ground floor class-rooms in the main building, and the other parts of the building have no first floor. On the top floor, facing north, is a large room for drawing-classes. The exhaust fans for ventilating the class-rooms are also on this floor.

The exterior is in brick, with stone dressings, and the roofs are covered with green Westmorland slates. In the gables of the science and library wings, their purposes are typified by carved representations of "Science" and "Art" from models by H. Pegram, A.R.A.

The site is about two acres in extent, and there is an extensive playing field at the back of the school.

The general contractors for the whole work were Messrs. Holloway Bros. (London), Ltd.

PICTURE EXHIBITIONS.

The Society of Portrait Painters.

The twenty-second exhibition of this society is open at the Grafton Galleries, and affords a number of opportunities for comparing what may be called the two main but very different objects of portrait-painting—namely, to produce a picture, or to produce a likeness. The latter may be valuable or not, in an artistic sense, according as it is characteristic or not. A mere "good likeness" is interesting only to the friends of the sitter, who want a memorial of what he looked like; what may be called a "characteristic likeness" has a wider interest, though it may not be a pleasing picture; Mr. Maclure Hamilton's "General Booth," in the first room, is an example; there is a little touch of individually observed character about it which gives it more than a personal interest. Mr. Harold Speed's "A profile portrait" is an example of a portrait which is a picture; we are not told, and we do not care, whose portrait it is; it interests us as a picture, for its colour and composition. M. Besnard's large portrait of the French Ambassador to Italy, standing in the centre of a "marble hall," has been characterised in a newspaper as the great work of the exhibition; we should place it as one of the "good likeness" portraits, well painted, but uninteresting in an artistic sense.

Mr. Lavery's "Miss Dundas," in the large room, if it is a good likeness, has both kinds of interest, as it is fine both in colour and line; one of the really good things in the exhibition. Mr. Da Costa's "Mrs. Evans Dick," full-length in front of the dark background of trees, is the old type of Reynolds and Gainsborough composition reproduced in a rather heavy

and loaded style. Mr. Clausen's half-length portrait of a man is a likeness portrait interesting from its broad style and its indication of thought and expression, and Mr. Mouat Loudan's portrait of a lady for its fine colour. Mr. Melton Fisher's portrait of Colonel Ferguson, in the long gallery, is another example in which fine colour gives a special interest to a likeness portrait. Among those in the large gallery which stand out for special interest are two by Mr. J. J. Shannon; one of Mr. Josef Hofmann, on the scheme which was often employed with effect by Franz Hals among the ancients, and Frank Holl among the moderns, in which the face emerges as the high light from out a general darkness, the only other light being the roughly suggested keyboard of the piano. His other picture, "On the Dunes" (which has been exhibited before at the New Gallery), may be a couple of portraits or not, one need not care about that; it is an idyll which one looks at simply as a picture, full of poetic and artistic suggestion—very French in style and feeling, and in the best French style too. It is a work quite above the average range of the exhibition, which contains various good portraits, and a considerable portion that are not so good.

The "private view" scene was rather amusing; the galleries were full of very well-dressed people engaged in conversation, but hardly any one looking at the pictures! Picture exhibitions seem now to be chiefly social functions.

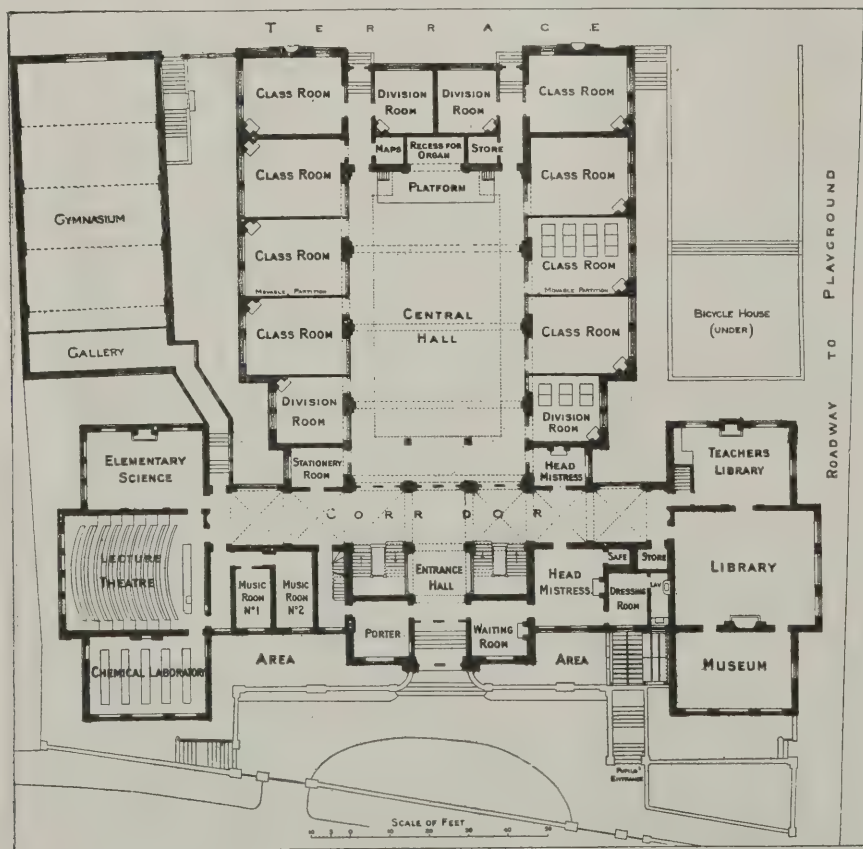
The Goupil Gallery.

At this gallery we find the works of four French painters not much known to fame—MM. Denis, Desvallières, Laprade, and Sérusier, who do not attract us very much. They, of course, all belong more or less to the impressionist school. M. Laprade's two Still Life pictures—"Nature Morte"—are clever examples of brilliant effect produced by strong touches. M. Denis' "La Plage Ensoleillée," nude figures on a beach, with the sea beyond, looks a good effect from the other side of the room; on close inspection the figures are scarcely modelled and the heads like Dutch dolls. Whether that is or is not a good way of producing pictures depends on one's view of the objects of painting. Of the futility of such pictures as M. Desvallières' "La Lecture," we have no doubt; a long bony nude figure, without the slightest beauty of face or form, cleverly painted in a sense, no doubt; but what is the use of painting mere ugliness?

It is a much pleasanter task to contemplate the exhibition of the 137 lithographs of the Senefelder Club, in the upstairs gallery. There is a great deal of capital work in black and white here; among others we particularly admire Herr Gravesande's broad studies of out-door effect, "Hiver en Hollande," "Hambourg," etc.; and, in somewhat the same style, Mr. Barker's "Banking up the Seine"; his "Interior of St. Mark's, Venice," is a subject not suited to black and white. There are some capital sketches by Mr. Pennell, especially "Monceau les Mines"; and there are, in fact, few things in the collection that are not good in one way or another. But then black and white is a good deal easier problem than colour!

The Leicester Galleries.

At this gallery there are two new exhibitions. One of them consists of paintings and drawings by Sir Alfred East mostly small landscape subjects in water



ST. PAUL'S HIGH SCHOOL FOR GIRLS, HAMMERSMITH: GROUND-FLOOR PLAN.

Note: As carried out, the seating of the lecture theatre has been changed so that the light falls from the left.



ST. PAUL'S HIGH SCHOOL FOR GIRLS, HAMMERSMITH: THE GREAT HALL. GERALD C. HORSLEY, F.R.I.B.A., ARCHITECT.

our; of which one of the finest is the other large one of "Morning at St. Ives, Cornwall," an assemblage of fishing-boats in the grey morning light. "On the west coast of Cornwall" is a fine bit of landscape painting, and a large sketch of "Segovia" is an exceedingly effective and picturesque composition. The other room contains a collection of water-colour drawings by Mr. Walter Tyndale, under the title "An Artist in Egypt." They are mostly in a rather sketchy and sketchy style of execution, but Mr. Tyndale represents a good many features of ancient Egyptian architecture very well. In the drawing of "The Hall of Offerings at Deir-el-Bahari" we see, particularly in section, an example of the

ancient method of arch-building with horizontal joints—courses of masonry horizontally bedded, but with their ends cut out to form the appearance of an arch; the drawing forms an exceedingly graphic representation of this curious habit, in Egyptian and in archaic Greek architecture, of building what is an arch in form, but not in structure, the reason for which it is difficult to understand. It may have arisen from the desire to avoid the thrust of the arch, while using the form of it as a matter of appearance. In other drawings, such as "An Arab School at Cairo," we see the early Mohammedan form of stilted four-centred pointed arch, but with the upper portion of the arch forming almost a straight line.

The drawings include a great many architectural subjects, and have special interest from that point of view. The small drawing representing "The Coptic Convent at Assuan," perched in the middle distance of a waste of sand-heaps, is a characteristic bit of Egyptian landscape.

The Fine Art Society.

At this gallery there is a collection of water-colours by Mr. Baghot de la Bere, an artist whose name is unfamiliar to us. A good many of the drawings are practically grotesques illustrating various mediæval superstitions, and more curious than beautiful. Some drawings of dilapidated town architecture—"The New House"; "Laroque"; "Cement Works, Cahors";

etc.—show a good deal of power of producing effect in a broad washy style of execution, quite different from that employed on the grotesque subjects, and more interesting in an artistic sense.

Messrs. Tooth's Gallery.

At Messrs. Arthur Tooth and Sons' Gallery in New Bond Street is a miscellaneous collection of works by deceased British and foreign artists, which contains a number of good things. There are three excellent examples of Prout's subjects of ancient architecture, in which everything seems to be almost in monochrome, except the spots of bright colour supplied by the costumes of the figures; he is an absolute mannerist, of course; one can tell the look of one of his pictures across the room; but then it is a capital manner as far as the architecture is concerned. There are a good figure by Fortuny; a large Scheveningen sketch by Israels; two or three good specimens of William Hunt; a landscape by Copley Fielding, showing very delicate treatment of distance, etc. Some of the names seen here seem to have lost their repute rather. J. Syer was a capital landscape artist of the old water-colour school; two of his works are here, excellent in style of handling, but one never seems to hear of him now; and G. A. Fripp's landscapes, good art of their school, seem somewhat dull in colour to the eyes of the present generation. Two pictures by Kate Greenaway and Mrs. Allingham, exceedingly alike in subject, both representing a rural cottage, a grass foreground, and some small figures, are rather instructive as to the difference between talent and genius. Kate Greenaway's is a good drawing, but Mrs. Allingham's has that something, indefinable, which the other wants. But the collection as a whole is quite an interesting exhibition.

The Alpine Club.

At this room is a collection of pictures by Mr. Roger Fry, as to which it is difficult to make up one's mind whether the artist means them to be taken seriously or not. We have seen very good water-colour drawings by Mr. Fry in former times. Our impression from the present exhibition is that he is playing a cynical joke on the public, and trying to see what they will swallow. At least we regard that as the more charitable conclusion.

STABLE, COWHOUSE, AND PIGGERY FITTINGS.

The architect who is much occupied in designing country-houses often finds that his chief difficulties arise with respect to provision for the housing of the live-stock. Most of the problems with which, in such a case, he is likely to be confronted are anticipated and solved in a neat and handy booklet, entitled "Stable, Cowhouse, and Piggery Fittings," a new edition of which has been produced by the Carron Company, of Carron, Stirlingshire, in which will be found, prefacing an admirable catalogue of fittings, a valuable collection of notes dealing with the questions of site and aspect, dimensions, loose-boxes, coach-houses, washing-boxes, stall-fittings, tiling, manger fittings, stable floors, haylofts, drainage, and other important details; these notes being accompanied by illustrations which include half-a-dozen suggested plans for the arrangement of stable fittings. The list is very comprehensive, comprising every detail about which information is likely to be sought, with, in each instance, price, description, and dimensions.

FIRE PREVENTION NOTES.

Equitable Building Fire.

In the newspaper accounts of the destruction of the Equitable Life Assurance Society's building on Broadway, New York, on January 9th, in which, unfortunately, several lives were lost, it was not always made quite clear that the building was not of modern fire-prevention construction. It was completed as long ago as May, 1870, in accordance with the plans of Messrs. Gilman and Kendall, with Mr. Geo. B. Post as consulting architect, but was completely remodelled, and its height increased by several storeys, in 1887. It then became thirteen storeys high, and is said to be the first office building in which passenger elevators were introduced. Eight of these having been installed, a revolution in the construction of office buildings followed, and the Equitable building was regarded as "the parent of sky-scrapers"; but although for years it was the tallest building in the city, it had long been completely dwarfed by the lofty buildings surrounding it. So old-fashioned had it become that its rebuilding was in contemplation; the acre of ground on which it stood being of far greater value than the structure. As it was a granite building, full of wood-work, its rapid and complete destruction is in no way surprising. Nor should the destruction of any type of skyscraper be

assumed to discredit fireproofing methods and fire-resisting construction. It should be remembered that in a building of such magnitude, holding such a large population, and constantly receiving so many visitors—it is said that 28,000 people passed through the Equitable building in one day—the risks are simply tremendous; and that the great height of the building both encourages the flames and prevents the firemen from getting at them. The chances of ignition being abnormally great and the opportunities of extinction abnormally small, the occasional destruction of a tall building, even of modern construction, should not shake one's faith in the entire efficacy of fireproofing construction when it is employed under fair conditions. It is significant that none of the adjacent more modern skyscrapers, which were so near to the Equitable building as to afford facilities to the firemen for playing on the flames, appears to have suffered.

Fires in Crowded Tenements.

In spite of all that has yet been done to minimise the risk of death from fire, fatalities are still very painfully frequent. They commonly occur in large houses that are let out in tenements to very poor people, who, as a class, are almost incredibly careless with regard to fire risks. Their ignorance and stupidity might possibly



THE EQUITABLE LIFE ASSURANCE BUILDING, NEW YORK, DESTROYED BY FIRE LAST WEEK.

have been greatly mitigated under a more rational system of education; but we have to take the people as we find them: also the buildings in which they are herded, and from which they do not always escape uninjured when fire breaks out. Many of these dwellings have been described as "veritable death-traps," and there is but too little reason to quarrel with the description. Given a building of three or four storeys, the floors of wood of exceeding dryness and inflammability, the only staircase of similar material, the inmates numerous and generally careless, then an outbreak of fire is of strong probability, and when the fire occurs it is sure to be fierce and rapid. In nearly every such instance, the inmates find that escape by the stairs is cut off by smoke or flame, or both, and that the desperate alternative is a leap from a high window. Taking this leap, innumerable people have been killed outright or maimed for life; and such incidents have been so common as apparently to have become accepted as inevitable and almost commonplace. The public apathy in the matter is comparable to the paralysing fatalism which is too lightly assumed to be peculiar to the Eastern races; otherwise the strong case for drastic reform in the regulation of crowded dwellings could not have been so long allowed to pass unheeded.

The Need for Systematic Inspection. No doubt the problem of preventing people from herding together in highly combustible dwellings presents many difficulties; but it is not on that account to be shirked. Two cardinal factors are (1) the objection to an efficient house-to-house inspection in order to ascertain the conditions; and (2) the expense of necessary alterations. The domiciliary visits that are easily tolerated on the Continent would be strongly opposed here, unless it were made perfectly clear that they could not occur generally or arbitrarily, but only in special cases in which there was good ground for supposing inspection to be necessary. Sanitation and water-supply, and, with regard to certain classes of buildings, the means of escape from fire, are even now subject to systematic inspection, and the principle might be easily adapted to such buildings as are known or suspected to be inhabited by numbers of people at serious risk of their lives. It is a well-recognised duty of governing authorities to prevent the spread of disease, and to procure the alterations of any conditions that might give rise to it; and while it may not be possible to contend that fire risks are of comparable magnitude, yet there is here certainly a parity of principle, the only difference residing in the varying degrees of danger. The sole question therefore is whether or not the lives that are lost and the property that is destroyed by fire are worth saving; and it would require considerable courage to answer at least the former question with a direct negative. Yet little or nothing is being done to prevent people herding together in circumstances that tend to favour outbreaks of fire, and to prevent escape from it.

Prevention and Escape. The law as to overcrowding should be made more stringent, and steps should be taken to render administration quite adequate. It is quite possible to prevent too many families crowding together in one house; but that is a question with which we have less to do than with the means that

in any case should certainly be employed to prevent the easy ignition and rapid combustion of large dwellings, and to provide adequate means of escape in case the means of prevention happened to fail. It has sometimes appeared at inquests that huge rents were being drawn from the buildings in which several families were congregated. Nevertheless, it might perhaps be thought on some hands to be not wholly just to compel the wealthy landlords of such property to go to the entire expense of refitting such premises on fire-prevention principles; and, in initiating any scheme for wholesale and complete reform, the local authority might perhaps be reasonably expected to become contributory. Local authorities, however, would probably object to countenancing in any way the overletting of large houses, and all housing reformers would cordially support them in that view. But the fact remains that these dangerously overcrowded dwellings exist in large numbers in various cities, and ought not to be tolerated. They are in various ways inimical to life, and they should be either completely reformed or entirely abolished; either process being conducted in a broadly humane and equitable spirit. It would seem that further legislation on this subject has become necessary; the conditions revealed at the frequent inquests on deaths from fire showing either that existing laws are inadequate or that they are systematically evaded.

The Chesterfield Fatality.

The lamentable occurrence at Chesterfield, by which five children lost their lives, offers but little occasion for comment. At a picture-palace entertainment, about five-and-twenty children, lightly dressed in pantomime style, were assembled in two small upper rooms, awaiting their turn to appear on the stage, when, in some unexplained way, the dress of one of them took fire. There was instant panic, in which five of the children were injured fatally. The published particulars are too meagre to afford any real ground for anything but the broadest generalisations. The first of these to occur to the mind is that the use of common untreated flimsy materials for dressing pantomime fairies, and the like, is unnecessary, and ought to be strictly prohibited. Accidents of the kind have been so numerous as to justify very drastic restrictions as to the character of the fabrics employed in such entertainments; and some revision of the laws and by-laws regulating public entertainments seems to be a matter of considerable urgency. Next (and this remark has no reference to the Chesterfield calamity) it would seem to be desirable to insist on official supervision of places of public assembly, more particularly in those semi-private halls of which the use for such purposes is intermittent and amateurish; as, for example, in many buildings on the outskirts of London where whist-drives, lantern-lectures, concerts, and amateur theatricals are occasionally held. In the dressing-rooms of such places, there is commonly displayed a notice to the effect that smoking is strictly prohibited, but it is always disregarded, as there is usually no one present possessing sufficient authority to enforce it. Anyone who has been behind the scenes at such halls, and observed how recklessly the nervous amateur actors throw down their cigarettes, cigar-ends, and matches, must marvel that fires in such places are not very much more frequent than they are.

BURFORD PRIORY.

Burford Priory, Oxon., which has now been sold by Messrs. Wilson and Gray to Mr. E. J. Horniman, a member of the London County Council, existed in the 13th century as an offshoot of the Abbey of Keynsham. The Harman family converted it into a lay residence, and it eventually passed into the hands of Sir Lawrence Tanfield, who was admitted to the Inner Temple in 1597. While Sir Lawrence lived there he entertained James I., and this was commemorated by a great heraldic panel of the Royal Arms, which is in excellent preservation. The King made his host Chief Baron of the Exchequer in 1607. A later owner was William Lenthal, Speaker of the Long Parliament. After the Restoration Charles II. dined at the Priory, and William III. was also a visitor there. Old pictures of the priory show that one wing had fallen into decay, although remains of it are still to be seen.

The most interesting parts of the interior include Lenthal's chimneypiece in the drawing-room, the ceiling dating from the time of Henry VIII., which has been well restored, the staircase, the Gothic arcading of the hall, the great fireplace, and the ceiling of the inner hall. The old chapel, which has not been touched, is connected with the house by cloisters and an upper gallery opening from the drawing-room. In the gardens, bounded by the River Windrush, there are many interesting features. Close to the house is a typical piece of Jacobean garden architecture, one of two summer houses on the west wall.

The Home Farm comprises Kitt's Quarries, from which came much of the stone for the interior of St. Paul's and Westminster Abbey, and a pretty old house which had been a residence of Waller.

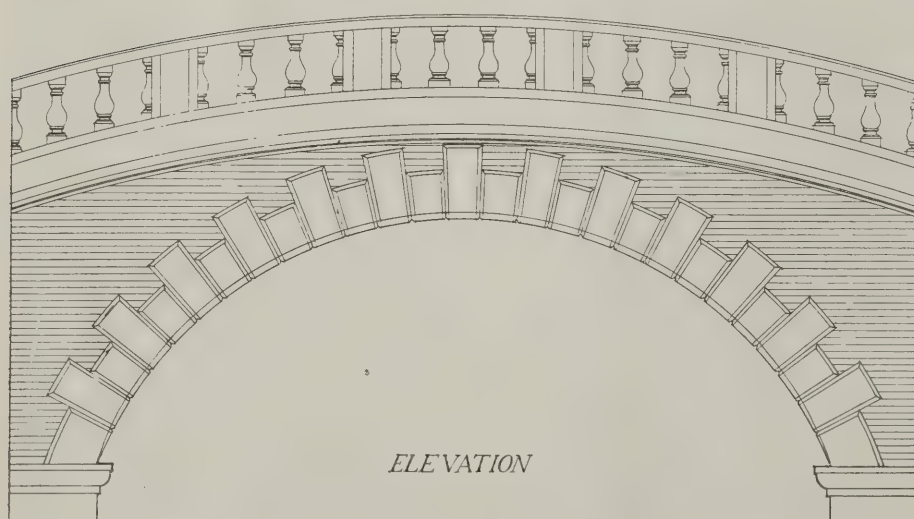
DETAILS, OLD & NEW.—XXXVI.

Bridge at Newbury.

Newbury, in Berkshire, possesses many interesting examples of eighteenth-century building—chiefly house fronts, which line the long main street and give it a quiet and comely air. Modern commerce is unhappily making sad inroads in the old red-brick fronts, substituting areas of plate glass for the proportionate windows of the olden time. A small river, the Kennet, flowing with a quiet and sluggish movement, bisects the town. And the delightful bridge, the subject of our illustration, was thrown across it in the eighteenth or early nineteenth century. It is built with one arch laid to a happy curve, which, springing from the walls of the houses on either side (which rise out of the water), reminds one of Holland. The arch is built of stone, the voussoirs long and short, with brick infilling to the spandrels. At the road level a stone cornice is built to a slight curve. And above that a stone blocking-course with a balustrade. Curiously enough, the balusters are of cast iron, although the pedestals and the capping moulding are stone. Why this was done it would be difficult to say; for they must have cost a great deal more to cast than to turn out of stone. The half-balusters butting against the pedestals are also iron. There are many small bridges up and down England, but none more charming than this one at Newbury, with its repose and quiet dignity. It also meets utilitarian needs by being nearly level.

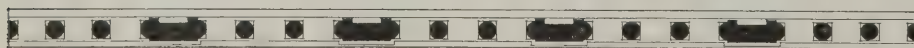


BRIDGE OVER THE KENNET NEWBURY

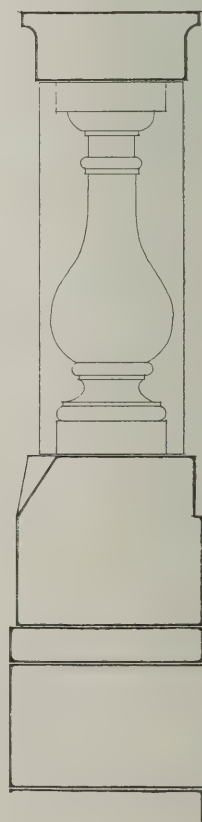


ELEVATION

PLAN



Scale of feet



Scale of feet

FIRE PROTECTION IN PARIS.*

With respect to fire-protection, as with regard to most other subjects, the various countries have much to learn from each other. In recognition of this fact, the British Fire Prevention Committee has, at different times, sent special commissions to study the methods and organisation of Austria, Hungary, and South Germany; Italy, Switzerland, and Alsace; Northern Germany; and, in August, 1911, Paris. A report upon this last-named visit has been prepared by Mr. Edwin O. Sachs and Mr. Ellis Marsland, and published as a special issue of the "Journal" of the committee. The special commission included, besides the two gentlemen named, the Earl of Londesborough, Mr. Horace S. Folker, and others.

The visit was timed to coincide with the review and competitions held in support of the firemen's widows and orphans' fund, which events brought to Paris a large number of provincial firemen, whose equipment and methods could therefore be the more easily observed and compared. The annual meeting of the International Fire Service Council was arranged to take place at the same time; and altogether the Commissioners were very fortunate in the enjoyment of opportunities of which they seem to have taken full advantage.

Great attention is paid to the means of securing physical fitness and perfect discipline in the members of the Paris Fire Brigade. Daily gymnastic exercises are conducted at all barracks, the practice including Swedish muscular work, and consequently the commissioners are able to report that "the strength, celerity, and stamina of the Paris firemen, owing to systematic athletic training, is probably unsurpassed," while there is an entire absence of corpulence. The brigade of 1,800 has an extraordinary number of superior officers—48, as compared with Berlin's 26 officers to 1,040 men, Vienna's 9 officers to 550 men, Hamburg's 12 officers to 512 men, and London's 5 officers to about 1,400 men. In the case of London, however, there are civil engineers, surveyors, inspectors, and others, who are left out of the count in its computation.

Approval is expressed of the centralising of the brigade's organisation work at headquarters other than a fire station; the advantages of freeing the organisers from the turmoil and interruptions of "turning out" being clearly obvious, while any disadvantages that might be supposed to arise from this detachment are counteracted by central position, and the fullest possible provision of modern means of instant communication. Some of the fire stations are of old building, and therefore do not fully conform to modern requirements; but newer stations are not only well equipped, but possess architectural merit. The Paris Fire Brigade was, in 1899, the first in Europe to adopt motor traction. The appliances are driven by petrol motors of uniform pattern; and the commissioners very justly comment upon the danger of thus depending on one system. In time of war or tumult, the

* Record of the Special Commission formed by the British Fire Prevention Committee to Visit Paris, August 1911, being a Diary and Notes compiled by Edwin O. Sachs, F.R.S.E., and Ellis Marsland, District Surveyor, from Memoranda prepared by the members of the Commission and from data put at the Commission's disposal by the Paris Fire Authorities. One hundred and thirty illustrations. London: Office of the British Fire Prevention Committee, 8, Waterloo Place, Pall Mall. Price 7s. 6d.

supply of petrol might be cut off, and the brigade rendered powerless at the very moment when its services were most needed. The salvage corps is not, as with us, an independent organisation, but is an arm of the brigade, 75 per cent. of the firemen being specially trained in the work; but the insurance companies subscribe £8,000 a year towards the expenses of this service. The commissioners have an interesting note on the dangerous-structure gear with which the Paris brigade is equipped; this consisting chiefly of the means of rapid shoring and strutting of tottering walls, and gear for holding up walls and ceilings. It is further suggestively noted that here, as in Berlin, facilities are afforded for the training of cadets in fire practice, as well as for the systematic drilling of squads of men from the army and navy. The brigade itself is described as "a military regiment of infantry, directly responsible to the usual military chiefs and the Minister of War of France, the regiment being placed at the disposal of the community of the City of Paris to the orders of the Paris Prefect of Police, and the cost of its maintenance, housing, and equipment being borne by the municipality, who, in their turn, receive certain contributions towards the expenditure, such, for instance, as the contributions of the insurance companies towards the salvage section." The organisation is described with admirably succinct completeness in the introduction to the report under notice. So also are the means of fire prevention in Paris, which, it seems, are, on the whole, as sadly to seek there as they are in London; the commissioners putting the case very politely when they say that "Fire prevention in a general sense has not yet been extensively developed in France, nor has it as yet become a popular or much considered subject either among engineers, architects, surveyors, or the officers of the provincial fire service."

The tube railways, however, seem to have been very carefully constructed with a view to fire prevention, the stations being large, the steps having an easy gradient, the subways being simply rather than tortuously planned, and the arrangements for cutting off the high-tension current in case of accident being specially happy. Neither the large shops nor the theatres appear to offer us any models for imitation; in fact, it would almost seem that in these respects Paris has a good deal to learn from London.

The report contains a fully illustrated account of the Paris Fire Brigade—its history, its constitution, its organisation, equipment, and housing. The headquarters, which, as before remarked, are not a fire station, but a central office, where nearly all the secretarial work is done, and where the colonel commanding and most of his staff reside, are next door to the police headquarters, as nearly as possible in the centre of the city. The Montmartre station is of modern construction, and contains quarters for three officers and 131 men. The Rue Blanche station, which is of older type, houses three officers and 124 men. The Port Royal station, for three officers and 130 men, is still older. Chaligny has three officers and 129 men. These are all "barrack" stations. That of Chateau d'Eau is a *poste*; the distinction between the *poste* and the barrack stations being that while the former are supplied by "shifts" of men from outside, and provide sleeping accommodation for only a few, the former house an entire staff.

LONDON'S MAIN DRAINAGE
PUMPING PLANT.

A notable addition to the pumping power at the London County Council main drainage station, Crossness, is about to be made. This station receives the total discharge of sewage from the whole of the south side of London. The sewage reaches the station in three outfall sewers each 11 ft. 6 in. in diameter, and the greater proportion of the flow is pumped into precipitation channels. The pumping plant, as originally installed in 1865, consisted of four beam engines working reciprocating ram pumps, each capable of dealing with 125 tons a minute. These engines were converted into triple-expansion sets in 1901, and in 1899 an addition was made to the plant of two triple-expansion vertical engines, each actuating three ram pumps and delivering 140 tons a minute. The total pumping capacity of the station at present is therefore 780 tons a minute. Steam at a pressure of 150 lb. is supplied by ten 30 ft. by 8 ft. Lancashire boilers, of which five are under steam at one time.

The recent addition of another low-level outfall sewer has made it necessary to supplement the pumping machinery, and it has been decided to do this by the provision of centrifugal pumping plant which will combine efficiency with large discharging capacity and will be immediately available at periods of heavy rainfall, when the quantity of sewage and storm water arriving at Crossness is doubled or trebled in a short space of time.

A tender from Messrs. Dick, Kerr, and Co., Ltd., has been accepted for the construction of an engine-house which will be capable of housing eight sets of centrifugal pumps and engines, each unit to pump about 100 tons a minute. This engine-house, with its suction culverts and connections, will be situated on the eastern side of the existing main engine-house, and the foundations and suction culvert will be carried down to such a depth that it will be possible to empty, if necessary, the suction culverts feeding the pumps in the existing engine-house. The steam for the engines will be obtained by adding to the present boiler installation four boilers similar to those now in use, so that the new installation will work as an addition to and in conjunction with the present pumping plant. Four sets of engines and pumps only will be erected at first, and tenders for their manufacture are under consideration.

The work will extend over a period of two years. The whole of the works are being carried out to the design of Mr. Maurice Fitzmaurice, C.M.G., the engineer-in-chief to the London County Council, and Mr. H. M. Rounthwaite, the mechanical engineer, will be responsible under the engineer-in-chief for the machinery.

Proposed Bacon Factory at Bulawayo,
Rhodesia.

A bacon factory of considerable dimensions, and with a capacity of 500 pigs per week, will be constructed at Bulawayo, Rhodesia, during the present year by the British South Africa Company. Specifications and plans are being prepared by Mr. Loudon M. Douglas, F.R.S.E., technical adviser to the British South Africa Company, 2, London Wall Buildings, London, E.C., from whom all further particulars may be obtained.

PORTLAND CEMENT ON PUBLIC WORKS.

By GERALD THORNHILL, Assoc.M.Inst.C.E.

(Concluded from page 54, No. 886.)

Hardening.

A test of the initial hardening of Portland cement is urgently needed, and would be very useful for the following reasons: (1) It would take the place of the Final Set test. (2) It would reject defective cement which hardens only on the surfaces. (3) It would give a better idea of the comparative strength of the sample than the tensile test does. (4) It would enable a user to differentiate between quick and slow hardening cements; and (5) It could be standardised. Reasons (1), (2), and (3) have already been referred to.

Coming to the fourth reason, it may perhaps be as well to state first that setting and hardening are not synonymous terms. The two properties are totally different, and seem, in point of time at any rate, to have no connection with each other. There is, however, a sort of general law, which has been established by numerous experiments, that, given two samples of the same make of cement, one quick setting and the other slow setting, the quick setting is the slower hardening. Possibly an extreme instance of this was obtained by testing two samples of one maker's cement. The initial sets of these two samples were as far apart as 16 minutes and 8 hours, but at the end of 24 hours the slow-setting sample was many times harder than the quick setting. Table 3 gives other instances of this strange law.

Again, there is an extraordinary difference in the rate of initial hardening of various makes of cements, and the difference is perhaps even more noticeable in various blends of rotary and chamber kiln cement from the same works. Thus, two samples obtained from one manufacturer, and having the same initial set, were tested for hardness, at 24 hours old. Sample "A" required a pressure of 175 lb. for a penetration of 19 millimetres. Sample "B" only required a pressure of 36 lb. for the same penetration.

FIG. 2.—EXPERIMENTS MADE TO ASCERTAIN RELATION BETWEEN HARDENING OF NEAT CEMENT AND THE SAND TENSILE AND COMPRESSION TESTS.

Age.	Hardening.		Tensile.		Compression.	
	Lbs. pressure divided by millimetres penetration.		Lbs. per square inch.		Tons. per square foot.	
	Sample A	Sample B	Sample A	Sample B	Sample A	Sample B
24 hours ..	7.9	3.6	99	39	50.2	18.3
48 hours ..	14.7	10.5	261	185	103.5	65.6
3 1/2 days ..	29	22	239	170	141.5	97.6
7 days ..	46	50	337	311	153.4	174.7

FIG. 3.—EXPERIMENTS CONDUCTED BY A CEMENT MANUFACTURER TO ASCERTAIN THE HARDENING OF HIS OWN CEMENT.

			Resistance for 19 millimetres penetration.		
			24 hours old.	48 hours old.	72 hours old.
Sample No. 1.	Initial Set	2 min.	Lbs.	Lbs.	Lbs.
..	..	..	25	—	200
" " 2.	" 4 "	..	75	225	—
" " 3.	" 41 "	..	175	300	—
" " 4.	" 87 "	..	200	350	—

The figures show that the slower the initial set is, the harder is the cement in its early ages.

Can it be seriously contended that these two samples are equally suitable for certain classes of work? "A" made a fairly hard concrete in normal time, whereas the concrete made with "B" was so soft that, at 5 days old, stones could be picked out of it with the fingers. Both samples passed the British Standard Specification, and the same aggregate was used for the concrete in each case.

For structural concrete work over centres, between shutters, and in deep heavy trenches, a quick-hardening cement is essential. In placing a contract for such work, the usual practice hitherto has been to order a quick-setting cement, under the impression that this would ensure quick hardening. But this has been proved above to be quite an erroneous idea, although some quick-setting cements may give good hardening results.

It is impossible to know whether a cement hardens quickly or slowly, unless it undergoes a hardening test.

Passing to the fifth reason, when the size of the initial set pat has been fixed, that set will be standardised. The pat used in ascertaining the initial set can also be used for the hardening test.

Aeration.

The question whether cement should or should not be aerated is always a bone of contention on big public works. Up to quite recently, most engineers specified that all their cement should be aerated. In fact aeration was looked upon as the panacea for all the ills and weaknesses that cement is subject to, and this deservedly so, for there is hardly a fault or defect that is not curable by aeration for a longer or shorter period.

Apart, however, from any advantage gained in the quality of a cement by aeration, comes the question, Is it economical? It is, of course, a well-established fact that aeration increases the bulk of dry cement; but what may not be so well known is, that cement also increases in

weight during aeration, through absorption of moisture from the atmosphere. Further, aerated cement requires more water to combine properly than non-aerated. Experiments have been carried out to ascertain the degree of increase in weight and bulk, and the particulars show that, due to aeration only, the increase in weight is 3 per cent., in bulk 11 per cent., and in bulk of neat cement mortar 8 1/2 per cent.

By the courtesy of Mr. G. N. Yourdi, M.Inst.C.E., the author is enabled to state in relation to the aerating shed of the Birmingham Corporation, in the Elan Valley, that there were booked out of the shed about 2,000 tons more than were received into it; therefore, on paper, the gain in passage through the shed was, say, 2,000 tons, or 1 1/4 per cent. This apparent gain may or may not have been wholly due to aeration. The bags sent out of the shed were supposed to be full weight, and liable to be checked at any time by one of the engineers. Then, again, considerable waste often occurs in an aerating shed, due to the flour being carried away by the draughts, or on men's clothes and railway wagons.

Take the figures given by the experiments and assume that 10,000 tons are wanted by a contractor, and, further, that the cement has to be measured, when making concrete, by volume.

FIG. 4.—EXPERIMENTS MADE TO SHOW THE EFFECT OF AERATION OF THE STRENGTH OF CEMENT AT DIFFERENT AGES.

No. 1.—EFFECT ON THE STRENGTH AT 7 DAYS OLD.

Description.	Sand Tensile lbs. per sq. in.	Sand Compression tons per sq. ft.
Aerated for 13 days ..	179	116
Non-aerated ..	249	173

No. 2.—NEAT TENSILE TEST UP TO FIVE YEARS.

Description.	7 days.	28 days.	3 mths.	6 mths.	1 year.	2 years.	3 years.	4 years.	5 years.
Aerated for 9 months ..	590	720	765	685	711	1035	890	705	800
Non-aerated ..	1454	1165	—	—	778	827	909	734	652

Aeration would increase his 10,000 tons to 10,300, and would make this 10,300 tons, owing to the increase in bulk of 11 per cent., go as far as 11,400 tons of non-aerated cement. So that aeration saves him the cost of 1,400 tons at, say, 30s., or £2,100. The cost of aeration at 9d. per ton would be £375, so that the saving would be £1,725.

Even if the cement is measured by weight, aeration would show a profit of £75, for the increase in weight would bring in £450, against the cost of £375. And in this case much better work would result, because there would be a large increase in the volume of the cement used and in the mortar produced. This is true, because, although aerated cement is not as strong in its initial stages as non-aerated, it gains rapidly in strength, and sooner or later becomes quite as strong as the other. See Table 4.

Measurement of Cement when making Concrete.

The author cannot too strongly deprecate the existing practice of measuring cement by volume instead of by weight. It affords an astute contractor a splendid opportunity of making a handsome and perfectly legitimate profit at the expense of the quality of the work.

FIG. 5.—EXPERIMENT MADE TO ASCERTAIN HOW MUCH THE WEIGHT OF CEMENT REQUIRED TO FILL A BOX WAS AFFECTED BY DIFFERENT METHODS OF PUTTING THE CEMENT INTO THE BOX.

Description.	Weight of box and cement.		
	Cwt.	qrs.	lbs.
(1) Box filled straight from bags—			
1st time	3	3	20
2nd "	3	3	27
3rd "	4	0	3
Average	3	3	26
(2) Box filled with shovel—			
1st time	3	2	23
2nd "	3	2	24
3rd "	3	3	2
Average	3	2	26

N.B.—28 lb. less cement contained in box when filled with shovel.

The usual practice in this country is to specify, in regard to concrete, that it shall consist of certain proportions of cement, sand, and broken stone, and that proper gauge boxes for measuring these proportions are to be furnished; in other words, the cement is to be measured by volume.

Such a clause is a source of joy to an experienced contractor, because he knows that, by careful management, he can make 90 to 95 tons go as far as the 100 tons of an inexperienced man.

In carrying out the work he will have one man, whose sole duty it will be to fill the cement measure carefully, lightly and gently, a shovelful at a time, instead of filling it in the usual "administration" way by dumping the bags straight into the box.

An experiment was conducted in order to ascertain how much the different ways of filling affected the weight. The particulars of this experiment are given in Table 5, and the result shows the difference in weight to be 6.8 per cent., the measure filled with a shovel being the lighter. Now assume that a contractor has a concrete mixer which turns out 160 mixings of one cubic yard each per day. On every mixing he saves 28 lb. cement, and on the day's work 2 tons; so that his saving every day, with cement at 30s. per ton, is £3. On every 50,000 cubic yards of 6 to 1 concrete he saves 680 tons of cement, or £1,020. This saving is of course effected at the expense of the quality of the work. In the face of these figures it is difficult to see any reason for continuing the present practice of measuring cement by volume, especially when it is so much easier and simpler to measure by weight. The manufacturer weighs the cement and is prepared to guarantee that each bag weighs so many pounds, therefore each bag contains a known quantity and does not need to be reweighed. If engineers would specify that concrete shall consist of certain proportions of cement, sand, and stone, the cement to be measured by weight and gauged with the sand and stone on the basis that one cubic foot of cement weighs 90 lb., the contractor could easily make his ballast box or hopper to suit either one or two bags of cement, and no measurement or weighing would be necessary.

In conclusion, the author tendered his thanks to Mr. Edward Sandeman, Inst.C.E., President of the Institution

of Water Engineers, for the invitation to read this paper and for permission to make use of the results of experiments conducted by his cement tester, Mr. T. Smith, to whom the author is also indebted.

RURAL HOUSING AT BYFLEET.

An interesting experiment that has been carried out at Byfleet, in the heart of Surrey, deserves far more attention than it has received. Byfleet is a wealthy residential district about an hour's journey from Waterloo. There has long been a dearth of cottage accommodation, and some of the men in the employ of landowners have been compelled to travel as much as 20 miles in a day in order to get to and from their work. Recently a few of the residents started a scheme known as the Byfleet Tenants, Ltd., and have carried it out under the auspices of the Housing of the Working Classes Act of 1890, and the Housing and Town Planning Act of 1909.

They intended to build 85 cottages, at a cost of about £30,000, and the scheme has developed down to the present to the extent of 30 cottages, 14 single-roomed flats with bed alcoves, and 18 flats with three rooms. These 62 homes, which have been created at a cost of £15,000, on land costing £600

per acre, are let at low rents, which, however, return four per cent. Houses and flats here have been designed by Mr. Raymond Unwin, and they make up a charming little street in close proximity to the station and surrounded by a little wood of birch trees. All the white-fronted and red-tiled dwellings are very substantially built. Each single-room flat has a bed alcove with a window to it, a kitchen with constant hot-water supply, electric light, of which the cost is included in the rent, and a small garden. The first-floor flats have a balcony. Larger flats have a sitting room, two bedrooms, bath, scullery, and pantry, electric light, and garden.

The rent of single-room flats, including all rates and taxes, is, 4s. 9d. per week, and for the larger flats the price is 6s. 3d. The cottages have three bedrooms, bath, either one or two living rooms, and garden, and the rent varies from 7s. 6d. to 9s. 6d. per week. There are no restrictions, but workers have the preference over all others, and both houses and flats are being snapped up as quickly as they can be built. Yet with land at the high price that prevails in Mid-Surrey, with thoroughly sound building and expensive modern drainage system, and every convenience for the tenants that skill and knowledge can devise, the scheme yields four per cent.



This pulpit, erected to the memory of Mrs. C. N. Peal by her sons, is executed in Caen stone with alabaster capping. The whole of the work was carried out by Mr. Gilbert Seale, sculptor.

PULPIT IN ST. JOHN'S CHURCH, EALING, LONDON.
HALL-JONES AND CUMMINGS, ARCHITECTS.

A JAIL ON THE RADIAL SYSTEM.

The new jail at Nairobi, East Africa, on the flats to the east of the town, presents many features that are of much novelty of interest for the European. The warders' huts, agreeably to a native's idea of comfort, are of mud and wattle, with grass thatch roof. Of 14 ft. diameter, with doorway and a small window opening at the opposite side, they are airy when open, and cosy when shut at night. Fifty-six such huts, laid out in two lines forming a square, leave an open space for drilling in the centre. These warders' huts are placed to the eastward of the jail building.

The original intention was to have a jail square of outside solid stone walls. From a central octagonal space, eight radial lines of cells were to run to each corner, and to the middle line of each side. On this central space a look-out tower was to be built. Between the radial lines of cells were to be open courtyards bath-shed, work-shed, etc.

This plan of jail building has been followed in India in some of the larger places of detention, and, provided there is plenty of land that is not too expensive, provides a system whereby an absolute close watch—from the central octagon—can be kept on all the cells.

The completed jail was originally estimated to cost about £20,000.

Later a revised plan was produced. It appears that the radial system of cells was objected to by the medical authorities as not providing sufficient ventilation in the ends abutting on the solid stone outside walls. Work in the meantime had been commenced on the building, after the radial system, and this portion has been completed. Future extensions will probably take the form of lines of cells abutting on to a central extended space—that is, cell lines from the side to the centre, running parallel with each other. This will facilitate the passage of air, thus guaranteeing that absolute ventilation so much desired by medical authorities.

The finished portion of the structure represents three of these radial lines of cells—or, to be exact, two and a half radial lines, surrounded by one side and a half of exterior wall. This outside wall is of solid stone, 2 ft. thick by about 15 ft. high, with coping stone on top suitable for a warder on watch pacing his rounds. The outside walls of the cells, lining the court-yards, are of solid stone, while inside walls are of cement blocks about 10 in. thick. One radial line consists of four large rooms, each of about 50 ft. by 20 ft., two of these being on each side of the corridor. There are six barred windows in each room of about three and a half feet. These, taken in conjunction with two doors in each room, provide plenty of air and ventilation. Besides these there are a number of ventilating spaces below the roof of the corridor, which is raised about a foot above the cell's roof. The roofs are of solid reinforced concrete, durable, strong, clean, and watertight. Floors are of cement, dry, clean, and healthy. In these community cells, each supposed to give sleeping accommodation to thirty-three prisoners, the prisoners sleep on thick coir mats spread on the floor, curled up in large thick woollen blankets. Emergency earth closets, abutting on and connected with these community cells for use at night time, have been constructed. All the earth closets in the place are entirely built of stone and cement.

The second radial line of cells is for those condemned to solitary confinement. There is a total of twenty-two cells, eleven on each side. Each of these is furnished with a large barred opening high up on the wall. The door of every cell has also a small barred opening, serving for ventilation, but primarily for the warder's eye. Ten cells, five on each side of the corridor, at the further end of this second radial line, are for native women prisoners. A gate across the corridor isolates these, and at the end of the radial line, which runs towards the corner of the outside walls, is the court-yard for the women's use. This courtyard is supplied with bath-room and two earth closets.

Then the third radial line, or, rather, half a line, as there are only the corridor and cells on one side, is for European prisoners. It consists of eleven cells, in all respects like the other solitary cells, with an additional opening at the outside end of the corridor through the main wall for the separate ingress and egress of white prisoners. In the courtyard in connection with this line of cells is a kitchen, and in the building a dining-room, two bath-rooms, and two earth closets are supplied. In the finished scheme, the European quarters will, it is understood, be removed to a separate building.

The interior ends of these radials are abutting on the central space, where there is a kitchen for the cooking of the convicts' food.

On the outside yard to the eastward is an open work-shed, and also a large bathing-shed. The east side of the prison and the south side are at present fenced with wire and interlaced split-bamboos.

The main entrance is to the north side, and is of temporary construction, built of cement blocks. The offices are of corrugated iron, and are placed inside of the temporary gateway. To the right of these, on entering, lies the hospital, temporarily built of cement blocks. There are two rooms for patients, with the usual hospital accompaniments of dispensary, kitchen, etc. On the left is the gallows-room, with drop pit and two cells, for prisoners under sentence of capital punishment. These cells are constructed of cement blocks, iron roof, and wooden ceiling.

An abundance of water is supplied by a pipe leading from the town main to the inside of the prison walls. All rain and other water is to be let off by cement drains.

Something less than £10,000 had been expended on the portion of the Nairobi jail so far completed.

A curious complication of the architect's functions may be noticed. It seems that he was expected to provide a fortress as well as a jail! Commenting on the calculation that the housing of the prisoners will cost about £3 per head per annum, the "East African Standard" remarks that "such expenditure could only be justifiable were the building meant for other and more profitable uses. If, for instance, it were intended as a place of defence in the event of any general native revolt, and could be thus used as a refuge for the wives and children of Europeans and Indians, the interest on the capital expenditure would be a well-paid insurance. So far as we have been able to ascertain, no such idea has been in the minds of the authorities responsible for this expensive structure. Nor is the building suitable, nor likely to be suitable, for defence purposes. Its location in the open plain is desirable, but there it ends. There are no loopholes,

and no corner turrets for a side-raking fire from machine guns. The water supply, conveyed to the interior of the walls by a single pipe, is liable to be cut off; and, finally, the fact that the outside walls are incomplete makes the jail for the present absolutely inadequate for any purposes of defence or refuge."

STANDARDISING HOT-WATER SUPPLY FITTINGS.

Mr. Henry Lea, M.Inst.C.E., writing in the "Times" engineering supplement, states that for some time past there has been a difficulty, increasing from year to year, in relation to the behaviour of iron and steel pipes, cisterns, cylinders, and boilers used in the supply of hot water for baths, lavatories, etc., in private houses, hospitals, and other institutions where the public supply of water has been of a very soft quality. Even galvanised iron succumbs, and in the case of steel galvanising affords but very slight protection from the corrosion which takes place, in many cases with such rapidity as to become a serious and costly matter.

Thanks to the efforts of the British Engineering Standards Committee, iron and steel pipes and the screw threads for them have been standardised for some years past, as set forth in Report No. 21, and great benefit has been felt from such standardisation. In the case of copper pipes, which do not require for the purposes under consideration to be nearly so thick as iron and steel pipes, the screw threads which are suitable for the latter are impossible for the former, because from the pitch and depth of such threads the thin copper pipes would be nearly cut through by the thread. The first thing, therefore, to be done is to standardise the copper tubes and their screw threads, for this is the foundation for nearly all that will have to follow, and this subject is now engaging the attention of a Standards Sub-Committee, whose work will be largely assisted by the information which is being collected and carefully tabulated by Associations of those concerned in the business. The National Association of Water Heating and Domestic Engineers, numbering some 70 firms of contractors, the Institute of Heating Engineers, consisting of manufacturers and professional men, and the Institution of Municipal Engineers are taking a keen and active interest in this work, and it is hoped that at an early date the Standards Committee, furnished with all the necessary details, will be able to issue their Report upon Standard Copper Tubes.

Upon this report as a foundation the next step will be to take up the subject of union joints, then, probably, hot-water cylinders, and, finally, it is hoped, fittings generally, as, for instance, gunmetal bends, tee-pieces, and valves. The standardisation of these things will be invaluable. Such is the state of confusion which now exists that the labour and cost of keeping a complete stock are becoming unbearably excessive. One London firm has stated that were a reasonable and common-sense system of standardisation insisted upon the result would be a saving of about £700 a year in its cost of stock keeping.

It is highly satisfactory (Mr. Lea concludes) to find manufacturers, contractors, and municipal authorities combining together to bring about such an important reform as this will undoubtedly be if carried out to a full conclusion.

COMPETITIONS.

Workmen's Dwellings, Banbury.

The Council of the R.I.B.A. are of opinion that the conditions of this competition are very unsatisfactory, but in view of the lateness of the date they do not see their way to inform members that they must not take part in it. They express the hope, however, that members will refrain from doing so.

Burgh School, Greenock.

A note from the R.I.B.A. states that: "Members and licentiates of the Royal Institute must not take part in this competition."

Extension to Salford Union Offices.

Fourteen designs were submitted in this competition, which is for extensions estimated to cost from £4,000 to £5,000, and Mr. Paul Ogden, A.R.I.B.A., the assessor, has made the following awards: 1st (£20), Messrs. Topham and Adshead, Manchester; 2nd, (£10), Mr. J. Bushell, Manchester.

Baptist Church and Schools, Nottingham.

Mr. Herbert W. Wills, A.R.I.B.A., the assessor in this competition, for work which is to cost about £7,000, has selected the designs submitted by Messrs. Ernest R. Sutton and F. W. C. Gregory, of Nottingham.

Scottish Memorial to King Edward.

A conference of Scottish local authorities, convened by the Glasgow Corporation, was held in Glasgow last week to consider the proposed memorial to King Edward. The meeting decided that the memorial fund should be applied in the first place to the establishment and maintenance of an institute to be called the King Edward Memorial Institute of Preventive Medicine; the institute to be dedicated primarily to research in relation to tuberculosis, and to be available to the whole of Scotland. A committee was also appointed to consider the question of the erection and maintenance of convalescent sanatoria.

LIST OF COMPETITIONS OPEN.

JANUARY 20TH, 1912. STATUE AT HAVANA.—Competition instituted by the Cuban Government for the erection at Havana of an equestrian statue of the Cuban General Maceo. Plaster models competing to the "Comisión Ejecutiva, Monumento al General Antonio Maceo, Secretaria (de Instrucción) Pública y Bellas Artes," Havana, before January 20th. The sum of 100,000 pesos (about £20,600) has been voted for the work. British sculptors proposing to compete could first put themselves into communication with the Commercial Intelligence Branch of the Board of Trade, 1, Basinghall Street, E.C., where also other particulars (in Spanish) may be obtained.

JANUARY 29TH. NEW GOVERNMENT PALACE, MONTEVIDEO.—Designs are invited for a Government Palace and a town improvement scheme. Premiums: For the former, £2,125 and £850; for the latter, £1,060, £640, and £425. Conditions, etc., at the Board of Trade, 73, Basinghall Street, E.C.

JANUARY 31ST. THE FEDERAL CAPITAL CITY, AUSTRALIA.—Competitive designs are invited by the Commonwealth of Australia for the laying-out of the Federal Capital City. Premiums are offered as follows: 1st, £1,750; 2nd, £750; 3rd, £500. Conditions, together with particulars, plans, and instructions, may be obtained at the office of the High Commissioner for Australia, London. Designs must be delivered by January 31st, 1912, to King O'Malley, Minister of State for Home Affairs, Commonwealth of Australia.

[The Institute of Architects of New South Wales and the R.I.B.A. have asked members and Licentiates not to take part in this competition unless the conditions are made more satisfactory. See our issue for November 8th, p. 485, and article printed in the issue of November 22nd, p. 537.]

FEBRUARY 3RD. NURSES' HOME, BOLTON INFIRMARY.—Premiums, £30, £20, and £10. Mr. John B. Gass, F.R.I.B.A., has been appointed the assessor.

FEBRUARY 15TH. NEW PARLIAMENT BUILDINGS, WINNIPEG.—Regulations governing the competition for the new Parliament buildings for the City of Winnipeg may be had from the High Commissioner for Canada, 17, Victoria Street, Westminster.

FEBRUARY 17TH. NEW OFFICES FOR THE PORT OF LONDON.—The Port of London Authority invite preliminary sketch designs for new head offices in Trinity Square, and for lay-out of a building site. Sir Aston Webb, R.A., is the assessor.

FEBRUARY 17TH. ELEMENTARY SCHOOL, YORK.—The City of York Education Committee invite competitive designs for a public elementary school to be built in Campheshon Lane, Bishopthorpe Road. Assessors, Messrs. T. Mellard Reade and Son, Liverpool. Apply, J. H. Mason, secretary, Education Offices, Clifford Street, York.

MARCH 15TH. LAYING OUT ESTATE, PRESTATYN.—Designs for laying-out the Prestatyn Estate are invited. Premiums of £50, £30, and £20. Application (with 19s. 6d. deposit, returnable) was to be sent by January 8th to Lord Aberconway and the Trustees of the Prestatyn Estate, 33, Henrietta Street, Strand, W.C. Designs by March 15th. Judge, Mr. H. V. Lancaster, F.R.I.B.A.

MARCH 16TH. PUBLIC OFFICES, HARROW.—Harrow-on-the-Hill Urban District Council invite designs for enlargement and alterations of their public offices, at a cost not to exceed £4,500. Premiums, thirty, twenty, and fifteen guineas. Plan and instructions (£1, returnable) from Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, Council Offices, Harrow-on-the-Hill. R.I.B.A. will be asked to appoint an assessor.

JUNE 28TH. TOWN PLANNING SCHEME, HALE, CHESHIRE.—Schemes are invited by Hale U.D.C., for town-planning in this district, for which premiums of £50 and £25 are offered. Apply to Council Offices, Hale, Cheshire.

JULY 1ST. NEW CITY EXTENSION SCHEME, DUSSELDORF.—Premiums £1,000 and £375. Particulars from the Chief Burgomaster, Dusseldorf.

AUGUST 30TH. THE HENRY SAXON SNELL ESSAY.—The Henry Saxon Snell prize of fifty guineas and silver medal of the Royal Sanitary Institute is offered for an essay on "Suggestions for Improvements

in the Ventilating, Lighting, Heating, and Water Supply Appliances and Fittings for an Operating Room and its accessory rooms for a General Hospital of 400 Beds (no Students)." Essays (in which two competitors of different professions or crafts may join) to be delivered before 4 p.m. August 30th, to the Secretary, Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., from whom full particulars may be obtained.

NO DATE. HOUSING SCHEME, SADDLEWORTH.—The council invite architects to submit designs for houses suitable for the working classes, to be built of stone and in blocks of not more than six, on certain plots of land which have been selected in the district of Saddleworth. The Council will make the following awards: For the first selected designs £25, second £10, third £5. Descriptions of the houses and other information may be obtained on application to E. Rowbotham, Clerk to the Saddleworth Urban District Council, Uppermill, near Oldham.

THE LATE MR. JOHN
TOMLISON.

A PIONEER OF NATIONAL FEDERATION.

With the greatest regret we announce the death of Mr. John Tomlison, secretary of the Manchester, Salford, and District Building Trades Employers' Association, and of the Preston Building Trades Employers' Association, and formerly secretary of the Lancashire, Cheshire, and North Wales Federation. Mr. Tomlison, who died at his residence, "Norton Lees," Ansdell Road, Lytham, on Saturday, January 6th, after a long and painful illness, was born at Preston on August 10th, 1856. At the age of 15, he entered the office of his father, with the intention of following the business of a joiner and builder. Ill-health, however, which ultimately resulted in permanent lameness, caused his abandonment of this intention when he was about 21 years of age, and for the next twelve years he followed no occupation. In July, 1890, he formed the present Preston Building Trades Employers' Association, with an initial membership of about 30, and was appointed secretary of that organisation, which position he held at the time of his death. The membership of the Preston Association has for a number of years averaged about 175, practically comprising the whole of the employers in the building trade in the district. In the year 1894, he assisted in forming the old Lancashire Federation—the pioneer of the present system of National organisation—and was appointed secretary of that body in the same year. Four years later an amalgamation took place with the Manchester, Liverpool, and District Federations, under the present title of the Lancashire and Cheshire, and he was appointed secretary of the reconstructed society, which position he ultimately resigned on May 31st, 1911. On the re-formation of the old National Association of Master Builders, he was appointed secretary of the Northern Centre Council, and about the same time accepted the secretaryship of the Manchester and Salford Master Builders' Association (since reorganised to comprise all branches of the trade), which, in conjunction with the Federation, opened offices in Manchester. In 1904 he took a very active part in the formation of the Federated Employers' Insurance Association, Ltd., to deal principally

with the risks of building trades employers, and for about two years he was one of the directors, but resigned at the end of that period.

In 1904-5, Mr. Tomlison took part in the negotiations for the now established scheme of conciliation intended to prevent strikes and lock-outs in the building trades, and on its adoption he was appointed employers' secretary to the National, Northern Centre, Manchester, and Preston Boards, but relinquished the secretaryship of the National Board about four years ago, on the appointment of the present National secretary, and resigned the two Northern Centre secretaryships three years ago, in which he was succeeded by his partner, Mr. James Denver. Mr. Tomlison acted as secretary to the National Federation for a brief period during the interval prior to the appointment of Mr. A. G. White, but was prevented by a very severe illness from attending the annual conferences held in Dublin during that period.

In the year 1910 he formed his business into a company under the title of John Tomlison and Co., and took into partnership his assistants, Mr. James Denver, who has succeeded him in one or two of his secretarial appointments, and Mr. Sidney Elston Rigby, nephew of Mr. Tomlison.

The funeral, which took place at Walton le-Dale, near Preston, on Tuesday, January 9th, was attended by several representatives of the various organisations with which Mr. Tomlison had been so long associated.

Mr. Bloomfield Bare, F.R.I.B.A.

The death took place on Monday of last week, at his residence in Huskisson Street, of Mr. H. Bloomfield Bare, F.R.I.B.A., the well-known Liverpool architect. Mr. Bare was an enthusiast in the promotion of the higher interests of his profession, and took every opportunity of impressing upon the public his architectural ideals. It is now nearly thirty years since Mr. Bare commenced practice as an architect in Liverpool, after receiving his professional training in the surveyor's office of the London and North-Western Railway. For five years he was in partnership with Mr. H. L. Bethwick, architect and surveyor, and it was during this time that Mr. Bare acted as secretary of the Liverpool International Exhibition of 1886. Leaving England, he took up residence in Philadelphia, U.S.A., where he practised as an architect, only returning to this country some seven or eight years ago. He immediately resumed his artistic activities, and associated himself with the organisation of the Art Workers' Guild. Mr. Bare was also a member of the council of the Liverpool Architectural Society.

Mr. William Hall.

The death has occurred of Mr. William Hall, head of the firm of Messrs. William Hall and Son, builders and contractors, by whom many notable buildings in Liverpool and Bootle have been erected. Mr. Hall was seventy years of age, and had been in business as a contractor in Liverpool for nearly half a century. A member of the Liverpool Master Builders' Association for very many years, he was in 1894 president of the Association.

Mr. W. B. Huntington.

Mr. W. B. Huntington, wallpaper manufacturer, of Worcester, who died on November 13th last, left estate which has been proved at £334,335 gross.

SOCIETIES' MEETINGS.

SOCIETY OF ARCHITECTS.

The third ordinary meeting of the Society of Architects for the session 1911-12 was held at 28, Bedford Square, W.C., on Thursday, January 11th, Mr. G. A. T. Middleton, A.R.I.B.A., past vice-president, in the chair. Ten candidates for membership and ten for studentship were accepted. Mr. John Darch, F.S.I., then read a paper on "Illumination as a Study for Architects," which was illustrated by diagrams and lantern slides.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

A general meeting of this society was held in the society's room at the Leeds Institute on Thursday evening, January 11th, the President, Mr. S. D. Kitson, F.R.I.B.A., in the chair. An interesting paper was read by Mr. G. C. Workman on "Reinforced Concrete Applied to Buildings." The lecture was illustrated by many slides showing both constructional problems and architectural treatment of interiors and exteriors. The lecture was followed by a discussion on which many practical details were debated upon. A vote of thanks was passed on the motion of Mr. G. S. Crundy, seconded by Mr. W. H. Thorp, F.R.I.B.A.

INSTITUTE OF ARCHITECTS OF IRELAND.

A meeting of the Council of this Institute was held at No. 31, South Frederick Street, Dublin, last week, the President, Mr. A. E. Murray, R.H.A., F.R.I.B.A., in the chair.

A highly satisfactory report from the Publication Committee was received and adopted. A vote of thanks to Mr. Allberry, hon. secretary to the committee, was passed by the Council.

A report from the Professional Practice Committee in connection with the importation of shopfronts was received and adopted.

The Standing Committee were appointed as follows: Professional Practice—Messrs. W. Kaye-Parry, F. Batchelor, L. O'Callaghan. Arts Committee—Messrs. G. C. Ashlin, W. A. Scott, G. P. Sheridan. Publication Committee—Messrs. F. Hayes, R. C. Orpen, J. H. Webb. Examination Committee—Messrs. H. Allberry, R. C. Orpen, F. G. Hicks.

MESSRS. THOMAS PARSONS AND SONS' STAFF DINNER.

The annual dinner of the staff of Messrs. Thos. Parsons and Sons, the well-known varnish and colour manufacturers, took place on January 6th, at the Horse-Shoe Hotel, Tottenham Court Road. More than sixty were present, and telegrams were received in the course of the evening from Mr. C. Withers, chief of the London office, and several of the country travellers, regretting their inability to attend.

The chair was occupied by Mr. P. Gilliard, the senior traveller present. The toast of "The King" having been honoured, Mr. Gilliard proposed the toast of "The Firm," coupled with the names of Mr. George and Mr. William Parsons. He remarked that the outside representatives of the firm, of which he was proud to count himself one, had every good reason to recognise its prestige. It was a very great thing to serve a firm with such a

reputation as that of Thos. Parsons and Sons.

Mr. V. W. Theobalds, the works manager, responding on behalf of the firm, said it would be a great mistake to suppose that because the business had been running for more than a hundred years its vitality showed any disposition to decline. Quite the contrary: it was thoroughly up-to-date, enterprising, and full of force, vigour, and vim. There was a large and ever-increasing staff of travellers, ready to go anywhere—they went to a good many places already. He had not heard that one had reached Greenland's icy mountains—perhaps varnish would be no good there—but at least one had visited India's coral strands, and had come back with a nicely filled order book. He referred, of course, to Mr. Herbert Lloyd, who was going out again very shortly; the best wishes of all present would go with him. He was speaking on behalf of the partners in the firm, who were unable to be present, and he was sure that in saying they could not be better served by any staff he was only expressing their feelings; he knew they fully realised all the efforts made by the staff on their behalf.

During the evening, the gathering also drank the health of the chairman, Mr. P. Gilliard; Mr. C. Withers, to whom a telegram was sent, expressing deep regret at his serious and continued indisposition; Messrs. A. G. Mercer and W. H. Pantlin, whose organisation of dinner and programme were much appreciated, and Mr. J. Bowden, the employee longest in the service of the firm.

An excellent musical programme, supplied entirely by members of the firm's staff, closed the evening.

The Replanning of Delhi.

It is stated that the Indian Government has practically decided to employ the services of a town-planning expert from Europe in connection with the alterations at Delhi involved in the change of capital.

The London Labour Movement.

The management committee of the London district of the Amalgamated Society of Carpenters and Joiners, as has already been announced, have given notice to the council of the London Master Builders' Association of demands for an increase of 1½d. per hour in wages, double pay for overtime, and a reduction of summer hours from 50 to 47 a week. This is part of a widespread movement for improved conditions of labour in this branch of the building trade, and notices to expire during the course of the present year have been tendered in thirty districts of the country, including Ireland.

King Edward Memorial.

Full-size designs and models are being prepared for the consideration of the King Edward Memorial Committee, which is to meet specially for the purpose about the middle of February. The committee allowed Mr. Bertram Mackennal the sculptor, and Mr. W. E. Lutyens, the architect, a period of three months, which to complete this part of the work and the progress made justifies the expectation that the committee will by the time named have before them everything necessary to enable them to come to a decision. When completed, the model will show the whole plan of the memorial which is to be placed in the Brock Walk in the Green Park.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 24th, 1912.

Volume XXXV,

No. 888.



DOORWAY IN THE RUE DES ARCHIVES, PARIS.

This doorway dates from the seventeenth century, and is a delightful example of French work; sober in expression, pure in style, firm in detail, and refined in proportion.



DESIGN FOR A SILVER-MOUNTED ROSEWATER EWER. BY ALFRED STEVENS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

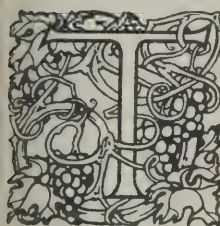
JANUARY 24th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 838.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Architectural Education in England and America.



THE current number of the "Journal" of the Institute of Architects contains the announcement of the first instalment of the competitions which are to form an alternative scheme to the "Testimonies of Study" for the Final Examination or Associateship of the Institute. The system adopted is that six alternative problems in design are to be set by the Board of Architectural Education in each year; three of them to be announced in January of each year, and three in July. The results of the work on these problems as tests of proficiency will come into operation in November next, and after the end of the year 1913 the existing "Testimonies of Study" will be abolished. The position in the interim does not seem quite clear, or is not quite clearly put, but we presume it means that up to the end of 1913 candidates for election may either rely on the existing scheme of "Testimonies of Study," or may take up the new scheme of treating the special subjects set; but that after the end of 1913 there will be no further option, and the treatment of the specially set subjects will be compulsory. In the meantime this leaves the examination of candidates to go on under two different systems at the same time, which seems rather to confuse the situation; but we presume it was thought that so radical a change in the method of examination could not be introduced except by degrees. We should have thought it better to give ample notice of the date when the change would be adopted, and then adopt it at once and entirely. It may be expected, however, that the majority of candidates during the present year will adopt the new system, because they will probably think (rightly or wrongly) that in doing so they will be more favourably regarded by the examiners.

Although three subjects are set in January and three in July, it is not intended that candidates should have the whole half-year to work them out in. They are all related together "for the convenience of candidates," which means probably that candidates may have an early opportunity of knowing what will be expected of them, and of directing their thoughts and studies towards the subjects they intend to take. But dates are fixed for the ending in of each subject; Subject I. on February 29th; Subject II. on April 30th; Subject III. on June 30th; and the same system will be continued in the following half-year, with the subjects announced in July. We do not quite see the motive for this, unless it is the convenience of the examiners, who may thus consider one subject at a time and have done with it; unless it is supposed that it is better for the candidates to be encouraged to concentrate their minds on one subject at a time, which may perhaps be the case.

The subjects set for the candidates run in pairs, so to speak, and seem to have been arranged so as to provide each case for an artistic and a practical study. No. I. consists of a design for a monument, not to cover more than 100 square ft., to commemorate King Alfred's re-founding of London one thousand years ago, for a public place in the City; which place may be rather difficult to find, if it is to be within what is usually understood as "the

City." The centre of Finsbury Square, or Finsbury Circus, might perhaps come within the definition. The drawings are all to be $\frac{1}{2}$ in. scale and shaded. The nature and number of the drawings seem to be left to the candidate, but as this is not a competitive examination but only for proficiency, that is not of much consequence. The stipulation for $\frac{1}{2}$ in. scale is a good one; on that scale, details of a design have to be carefully considered, and an effect cannot be got by mere effective sketching on a small scale. It is surprising, in what are called "sketch competitions," what a difference there is between the effect produced by a small sketch elevation, and the same elevation when it comes to be worked out by the same hand to a larger scale. The other subject, accompanying this, is a terrace of five houses of 20 ft. frontage for a small watering-place, which will show what the candidate can do in the planning of a small street house. These are to be $\frac{1}{8}$ in. scale, with a detailed construction of one house to $\frac{1}{2}$ in. scale. The King Alfred monument ought to prove an interesting and suggestive subject in the purely artistic treatment of architectural design.

The second subject consists of a large monument "To an Explorer," to be placed against the wall of a public building; another $\frac{1}{2}$ in. scale subject. A limit of width should have been given, as a limit of area was given in the first subject. The accompanying subject for No. II. is a cloister, with an external entrance gateway or tower round a courtyard of a collegiate building, 100 ft. square. It should have been stated whether the 100 ft. measurement includes or does not include the width of the cloister walk; probably it means the width of the space exclusive of the cloister, but it would have been better to have this precisely stated. This is to be $\frac{1}{8}$ in. scale, with a $\frac{1}{2}$ in. detail of "the construction of one bay," so that this provides for the practical constructional element in the drawings. No. III. subject is a detached ball-room to a large country house, connected with the house by a covered way; "the decorations should be specially considered"; all in $\frac{1}{2}$ in. scale drawing, with a detail of the decorations. The scale of this detail should have been specified; this is again a slight want of precision in the instructions. This is a good subject for drawing attention to the treatment of internal decorations, which in such cases are too often not done by the architect, but entrusted to a firm of "decorators." The more architects give their attention to this matter of interior decoration the more likely they are to keep it in their own hands. In connection with this we may suggest that one of the remaining subjects might very well be given to the designing of a suite of furniture for a room. The second subject, together with the ball-room, is a landing-stage to a river or lake, with a restaurant; drawings to show complete construction $\frac{1}{8}$ in. scale and $\frac{1}{2}$ in. scale, but it is not stated what the $\frac{1}{2}$ in. is to include. We fear this want of precision will leave the Institute Secretary under the necessity of answering a good many questions.

That is the only criticism to be made; the subjects in themselves, so far, seem to be very good ones, calculated to test the candidates both in their artistic and practical proficiency. Candidates for the Final Examination must submit designs in answer to at least four of the six problems; the three already set and the three further ones to be set in July. We presume that means that each pair of subjects

is considered as one; another point which is not made as clear as it ought to be, and about which there will probably be questions asked. It will be interesting to see what the remaining three problems will be. We may suggest one or two. A design for a terraced garden, in plan and section, including the plan of the front of the house with which it is connected. A design for a stone bridge in a park, for a stated width of waterway, width of roadway, and height of the crown of the bridge above water-level. A design for an organ-case, for an organ of a specified size; a subject capable of much better treatment than it generally receives, and which is too often left to the organ-builder. Look at the grand treatment of some of the eighteenth-century German organ-cases, which are really works of art; we never see such a thing in modern England. Some of the eighteenth-century English organ-cases are finely treated, but the English organ of those days was too small an affair to vie with the great German erections. Nowadays we have organs of great size in town halls, but we rarely see a really fine organ-case; and there are few subjects more suggestive. To go to a very different class of subject, a great warehouse built in reinforced concrete might be a good exercise both in design and construction. But the new scheme, so far as it has gone, seems to promise a great deal in the promotion of architectural design in the future.

A recent issue of the "American Architect" contains the long Report of a Committee on Education of the American Institute of Architects. It treats the subject of architectural education in a very broad and comprehensive spirit. The general tendency of the Report seems to be that it has been very difficult to get the American architectural student to take any interest in architectural training except in regard to that kind of study which may lead to the making of money; what the Report calls "bread-and-butter courses," the object of which was "to make the student a wage-earning animal at the earliest moment and in the line of narrow, intensive activity. The result has had its limitations so far as the making of character and the development of culture and education are concerned." Within the last five years, it is said, there has been rather a reaction against this view of architectural education, but there seems to be still a complaint of the want of a broad and comprehensive interest in architecture. What is specially complained of is the want of interest in architectural history:—

"We have found that in the extension courses that now exist—except in the case of Boston—lectures on history are the least popular; this year, for example, New York could produce only one man to take ancient architectural history in the evening classes, and but five for the mediæval history, while twenty-four students took architectural drawing. This is all very natural, for the driving motive is quick increase of pay; but it means, if continued in, simply one thing, and that is an overplus of clever but essentially ignorant architectural draughtsmen, who will remain such to the end of their days, and a dearth of men of sufficient cultivation and intelligence to become efficient practitioners of architecture."

Is not this partly the fault of the American public, the clients of the architects? When we read the statement, as we did not long ago in an American article, that a man who proposes to erect a new building wants the drawings in a week, and that if one architect will not undertake to furnish them in that time he will go to another who will, it is not surprising that the faculty of quickness in drawing, of producing something presentable in the shortest possible time, comes to be unduly valued. This demand for rapid designing and building is creeping over us in England too, though it has not arrived at the aggravated stage which seems to exist in America; and both the English and American public need to be taught that good architectural design is not a commodity which can be produced in a hurry. Designing done against time can generally mean only the putting together of stock elements in architecture which are kept ready to hand; the most certain way of producing common-place work, the highest

merit of which can only be to look fairly presentable. On the other hand, it is rather curious to find an American education Report lamenting the want of interest in architectural history, just at the time when some of our own most thoughtful teachers are saying that too much attention is directed to history, and that it is owing to this that our contemporary architecture becomes a mere echo of the past. The truth is that historical knowledge is of the greatest importance provided the right use is made of it; without it no one can fully realise and feel what a great and endless subject architecture is; but the knowledge should be used to widen the outlook, to enlarge our ideals, not to furnish matter for mere realistic imitation.

Another subject of complaint in the American Report is that in some of the schools no consideration is given to modelling, which, as is rightly observed, "is the best possible method whereby students may be brought to think in three dimensions instead of in two." In our own Architectural Association schools modelling, we believe, takes a place, though perhaps not a very large one, in the course of instruction; and in regard to this point it may be suggested whether one of the subjects in the new Institute examinations for the "Final" might not include the production of a model of a design. The introduction of such a requirement would have a very important influence in reviving the practice of showing a design in the form of a model; a practice so largely used by the Italian Renaissance architects.

Students' Drawings at the Institute.

THE designs for the Soane Medallion are not up to the best average by any means. The subject given was a guildhall to seat 1,200 on the floor, with a smaller hall to seat 400, and a banquetting room for 200; the building to be regarded as situated in a public park, 100 feet back from the road; the drawings required being a plan of each floor, two elevations, two sections, an exterior perspective, and a street of details to $\frac{1}{2}$ -inch scale.

It is a large scheme for students to undertake, and much more serious work has to be done to win the Soane than is sufficient for the Royal Academy students to win the larger prize of 200 guineas; the Academy Travelling Studentship being, in fact, in most years, a reward rather easily earned. For the Soane some very elaborate sets of drawings have been sent in, but hardly any of them can be regarded as at all a satisfactory solution of the scheme. One thing that strikes us is the tendency to treat the main hall as a wide area—a circle, an octagon, or a square. This is the worst type of plan for an assembly hall where people are to hear anything, speech or music, uttered from a platform. The circular form promotes echo, and both that and a square form spread the audience out too much at the sides. The motive for the adoption of these types of plan is evidently the desire to get in a dome as the principal external feature, and perhaps the desire to show ingenuity or invention in planning, in the manner of working the subsidiary rooms around the central circle or octagon. Thus "Guild" shows his large hall as a square placed diamond-wise, with an apse at each point, and the two smaller halls parallel with two of the sides. The exterior perspective, with semi domes over the four apses, abutting against the central dome, looks very awkward. "Circle City" makes a better disposition of masses, the small halls extending as a front block right and left of the entrance, with the circular Guildhall in the rear. "Ou Topos" gives a Greek cross plan for the Guildhall, with the two smaller halls parallel with the two opposite recesses of the Guildhall, with a vista across; but the Greek cross is one of the worst forms for a public hall, in point of convenience and hearing. "Black Fish" has a circular hall in the centre, with subsidiary halls and other rooms projecting as four equal arms from it, in cross form; there is nothing to recommend it in plan, but the exterior perspective is quiet and in good taste, though a little too much like a prison. The other named already show no merit whatever in exterior treatment.

"Vista" seems the only design to which the medal could possibly be awarded. The author has adopted the proper form of a long rectangle for the guildhall; the corridor communication is well arranged, as also the cloak-rooms for ladies and gentlemen in connection with both the main entrances (an important point often neglected or muddled in student plans); the interior treatment of the large hall is good, and the arrangement of organ and orchestra much better than is usually seen. The architectural treatment is adequate in detail, but it would have been much better if the author had omitted the tower.

Among the other designs, "Fraternity" seems so enamoured of the square that he makes all his halls, large and small, complete squares. "Ship" (device) shows the best plan next to "Vista"; his circular columned "staircase hall" hardly deserves the name, as there is no staircase in it, but two rather narrow staircases leading out of it on opposite sides, which would be somewhat ill-lighted. "Vitæ" adopts an octagon with equal sides for the guildhall, with one of the smaller halls, and various committee rooms, planted against the sides of the octagon; there are also four reception rooms on different sides, but the banqueting hall seems to have been forgotten. "Experientia docet" shows a square guildhall, but otherwise a fairly good plan, though it is not good designing to make a banqueting hall architecturally balance two committee-rooms on the opposite side, merely by omitting the cross wall. A hall should show differently, in the architectural arrangement, from a couple of committee-rooms. The piled up central mass—a kind of Tower of Babel—is an effort to be sublime, but is out of place and useless.

We should not be surprised to hear that the Soane Medallion had been withheld this year; but if it is awarded, we should say that "Vista" is the only design which has any claim to it. (We are writing this notice prior to the announcement of the awards, owing to exigencies of going to press.)

The Tite prize is for the best design for a central courtyard of a Royal Exchange, covered by a roof. The average here is much higher than in the Soane designs, but the problem is a good deal easier. Here, again, there seems rather a tendency to adopt circular plans; one of them, signed "The Circle," is very clever as regards plan, with columns surrounding the interior, the spaces between which are occupied alternately by a niche and an entrance door into subsidiary apartments and offices. The author has adopted the Ecole des Beaux-Arts system of colouring and shading the floors and leaving the blocks of wall white; though it does not render a plan so readily intelligible as the English system of shading the walls dark. The roofing is a dome with round lights at the springing. "Centres" has also a circular plan, roofed by a dome with a central eye; there is a two-storeyed columnar order; it is good and correct, but not very interesting work. "Dum Spiro Spero," with a court in the form of a parallelogram, is superior to either of these; the details of the Roman Doric order and of the attic are beautifully and delicately drawn, and the whole set of great merit. The competitor who signs "φερω-κουρητε" presumably means his design to be executed in reinforced concrete, but the details, though clever, do not show any particular fitness for execution in that material; a serious fault in the design, taken as a whole, is that the three domical ceilings have no architectural relation to anything in the plan. The only other one we need mention is that signed with the device of a Red Lion. This is a rectangular court with a very good and architecturally conceived plan of the corridors; the elevation shows a rusticated basement with arched openings, surmounted by an order of coupled Corinthian columns; the detail sheet is a very good one. We are not sure that this is not the best fulfilment of the programme set.

There are some fine sets of measured drawings for the silver medal and ten guineas. "Arno" shows a very complete set of the church of Santo Spirito; "Sphinx" a small set of drawings of the gaim architecture of Cork prison;

There should rightly have been two r's in "φερω," or does he mean to make a pun by adopting the Greek verb "φερω"—"I bring concrete"?

and "Zeta" a very complete set of drawings of Compton Wynnyates, with the plan coloured to show the dates of different portions. If, however, the difficulty of measured drawings of this class counts for anything, the draughtsman under the odd motto "Shopeinshoudes" should have due credit for his set of drawings of the octagonal lantern at Ely, a subject the difficulty and complication of which might well have deterred a student from attempting to measure it up. It is done with great care and minuteness in showing the construction, and does high credit to its author.

The drawings for the Grissell Medal are not remarkable; unfortunately, they seldom are, this essentially practical prize apparently offering little attraction to architectural students. The drawings of the two applicants for the Owen Jones Studentship, Mr. Noel Leaver and Mr. G. W. Mason, it would be difficult to choose between; both show exceedingly good specimens of illustrated drawings from coloured subjects, polychromatic architecture, mosaics, etc., mainly from Italy. There is a large collection of sketches by candidates for the Pugin Studentship, but our impression from a necessarily brief examination is that they did not exhibit so large a proportion of good work as has sometimes been seen in competition for this prize.

The awards, announced at the moment of going to press, are as follows:—*Soane Medallion*, Certificate and £50 each: "Circle City," W. Friskin (London); "Antæ," P. de Jug (Leeds); *Owen Jones Studentship*, Noel H. Lever; *Pugin Studentship*, James Macgregor; *Tite Prize*, "Red Lion," Louis de Soissons (London, S.W.), Hon. Mention, "The Circle," T. H. Chalkley (London); *Grissell Prize*, "M-CM-XII," Thos. Braddock (Wimbledon); *Institute Silver Medal and 25 Guineas*—Essay—T. Harold Hughes (Aberdeen); *Institute Silver Medal and 10 Guineas*—drawings—A. E. Maxwell (London, S.W.); *Arthur Cates*, J. B. F. Cowper; *Godwin Bursary*, Geoffrey Lucas (London).

WHAT IS WANTED IN THE BUILDING TRADES.—III.

(Concluded from page 63 No. 887.)

TO resume consideration of the German method of professional training for master builders.

A short survey of the regulations in regard to apprentices, and the testing of journeymen and masters, will show the thorough way in which the organisation of the professional side of the building trade is carried out.

"Before anyone can undergo the test for Mastership in the building trade, he must be able to prove that he has undergone the test for journeymanship in one of the handicraft branches of the trade."

This provision of the Law of 1908 does not come into force until October 1st, 1913, and of course is not retrospective.

The guilds provide panels of members suitable to serve on commissions to which are confided the testing examinations for Mastership. The president of one of the higher Courts selects the commission from these panels. Appeals against rejection by the Test Commission may be made to the Courts within two weeks thereafter, but the Court must hear the guilds also before granting the appeal.

"The Law requires that the test must bring forth information as to the capability of the candidate for the sole conduct and cost-keeping of the usual work of the trade, as also to the possession of the otherwise necessary knowledge for the sole management thereof, and in especial to the book-keeping and cost-keeping required for its proper conduct."

The guild sets the questions to be asked, subject to the approval of the Ministry, which also regulates the formalities relating to the order and conduct of the test. Here are a few extracts from the regulations in force in Berlin and district (masonry and joiners' work):—

Tests for Candidates.

In making application to the Commission for a test, the

candidate has to refer to his present or late employment, write a short historical account of his trade experience, produce a certificate of having passed a journeyman test, also a certificate that since the expiry of his apprenticeship he has been engaged in the handicraft in question for at least three years, that he has become practically capable therein, and that he has spent a further two years as a leading hand therein. He must also furnish certificates showing what technical instruction classes he has attended.

If his preliminary statement satisfies the Commission, he is informed of the fact, and a date is fixed for test. Near relations, former employers, or partners of candidates are excluded from the Testing Commission. Not more than six candidates may be invited for any one day. Tests are held at intervals of six months generally.

A modest fee is required from each candidate, which goes to the guild that bears the cost of the fees paid to the examiners and other costs of these commissions. In certain circumstances fees may be remitted in the discretion of the Guild Council.

The test consists of an oral examination and the execution of a test piece of work, including the setting-out of a small design with description and estimate of cost, to a scale of $\frac{1}{100}$, together with some details of construction to a scale of $\frac{1}{10}$; also an estimate of the quantities and cost thereof.

The test extends over six working days of eight hours, and is designed to test fully the capacity of the candidate. It takes place under supervision of members of the Commission in a place set apart for the purpose.

The oral examination is directed to test the general trade knowledge of the candidate, his knowledge of simple book-keeping, and of the legal and other enactments affecting his trade. His knowledge of trade terms is tested by requiring him to describe fully the test-piece.

He is examined in calculations in regard to roofs and the corpus of buildings, with examples from current practice; his knowledge of statics and factors of safety being tested by simple examples in wood, stone, and iron building construction.

He is examined in foundations, their characters, and the method of dealing with various kinds, masonry and the usual constructional types thereof, the like for wood construction and for the general finishing of a building. His knowledge of materials is tested, also his general grasp of the theoretical side of the art.

Finally his knowledge of how to direct building work and how to deal with variations and admeasurement are tested.

The examination may be shortened for those who have passed a final examination at any State or State-recognised building school. A verdict is rendered within eight days. If a pass has been secured, a certificate records it; if the candidate has failed, he is told in what respect, and a delay is prescribed which must expire before he can offer himself for re-testing. It is only necessary to be re-examined in those points in which the candidate failed on the former occasion. A second rejection is final.

The possession of a pass certificate entitles the candidate after his 24th year to assume the title of Master, and to undertake the training of apprentices. In this connection the Builders' Guild of Berlin has prepared an elaborate syllabus of the work in which a student should be prepared before presenting himself as a candidate for the Mastership test.

And the work of the guilds does not stop here, for they consider that the proper training of those who have to follow on is their most important work.

The indentures of apprentices is the foundation of the training. The apprentice must serve at least three years, every one must be bound, and this fact notified to the Guild, which thenceforward keeps track of the apprentice.

The employer of an apprentice is legally bound under penalty to present him for his journeyman's test. He must not only present him, but do his best to get him satisfactorily through it.

An apprentice who fails in this test cannot advance any further in his profession. The tests are bi-yearly, and on

similar lines to those already described, but on a lower plane of acquirement.

The test comprises two parts, theory and practice; the practical part is for handicraftship, while the theoretical part relates to the preparation, handling, and care of materials used in building, also to the characteristics of good and bad materials and the use of machines.

All these requirements imply the provision of

Proper Building Schools,

and this has not been neglected. There are various grades of schools, such as:—

(1) Schools preparing pupils to act as master builders and contractors; (2) schools giving instruction suitable to those who will be employed in offices and on works as draughtsmen, foremen, etc.; and (3) schools for the preparation of those who intend to become technical employees under the Government, railways, and public bodies, on staff positions.

The schools are mostly State-provided and controlled. They receive pupils from the age of sixteen who have received a primary education, selection being by examination. Adult mechanics are however admitted to certain classes. Elaborate syllabuses set forth the courses of study, and test examinations are held at their conclusion. Courses of lectures on the higher branches of the building art are given in Berlin for master builders.

Conclusions.

It must be evident from the foregoing that in Germany the art of building is held in esteem, and that the title of Master Builder is intended to mean a real professional standing and a higher level of attainment than commonly obtains here.

This country has been learning a good deal from Germany during recent years, and it seems as though there is here another opportunity to acquire the knowledge which pays, and to turn it to account for the cure of the evil which always afflict the building trade, but are especially in evidence when times are hard, by establishing a thorough system of technical and professional training on similar lines to those in force in Germany, so that everyone who professes to be a builder may be expected, in the near future, to have qualifications equal to the demands of one of the most exacting, varied, and progressive industries.

It would seem that to the Institute of Builders, an old established and respected institution, a great opportunity is given. If that body were to lay itself out to extend its influence by means of county branches, and, after awakening builders generally to the need for better professional training, proceed on similar lines to those which have been pursued by the institutes of other professions, so that Fellowship it should mean a high standard of professional attainment, it might eventually control the professional training for the building trade as effectively as the professional training of lawyers, medical men, and engineers is controlled; and to the mutual advantage of members of the building profession and the public whom they serve.

The whole educational system in regard to this industry also needs overhauling. Co-ordinating and proper building schools and colleges should be established in important centres. And when the building trade can show that it provides a thorough training and testing of those it admits into its ranks, it will have a good case for going to Government for that legal protection which is the ultimate need of all professions.

The first thing required is the raising up of an examination of what might be done to improve the professional qualifications and standing of builders as a class, in which connection the following extract from a book by Mr. Hyndman may be cited with force:—

"It is the conception of what shall be that breathes life into what is. The mere machinery of politics [the writer would substitute "organisation"] is useless without the forceful energy of intelligent idealism to provide the motive power."

[The opinions of our readers on this subject are invited.]

THE WORK OF ALFRED STEVENS.

BY E. F. STRANGE.

The reputation of Alfred Stevens has been steadily advancing since his death, and to-day his work, much of it in a sense architectural as well as monumental, is more widely, if not more highly, appreciated than ever before. Mr. Strange's admirable synopsis of it, and the accompanying illustrations, will therefore be cordially welcomed.

A LECTURE on the work of Alfred Stevens was delivered by Mr. E. F. Strange, Assistant Keeper, Victoria and Albert Museum, on Monday, January 15th, before the Architectural Association.

Mr. Strange said he would first run over the main facts of Stevens's life. Stevens was born on December 30th, 1817, at Blandford, and was the son of a house painter. He began to copy pictures at the age of ten, and he painted a wonderful portrait of himself, reputedly at the age of fourteen years. He was introduced to the Hon. and Rev. Samuel Best, by a Mr. Henry While or White, who described himself as "fond of the art of painting." There was some doubt about the name, but White was probably correct: Best was Stevens's "principal benefactor," and he sent him to Italy in 1833. Stevens went to Naples first, and he himself said that he spent eight years at the Academy at Florence—in two periods of two and three years, with an interval between. He arrived in Florence in the autumn of 1836. Stevens promised to write every month, but a whole year passed without any tidings from him. Whereupon Mr. White wrote to the Director of the Academy, conveying the anxiety of Stevens's parents, and enquiring whether Stevens had met with an untimely end. The Director, in his reply, said that Stevens had been working there, but not as a student of the Academy. He had been studying in the life school and had made a considerable number of copies of pictures. At that time, said Mr. Strange, he was away with an American sculptor named Kinloch.

In his book on Stevens, Stannus said that he went to study Salvator Rosa, but Stevens was known subsequently to have changed his mind. During the time he was in Italy he managed to see much, to visit most of the towns, and to study most of the work. A number of Stevens's Italian studies and sketches remained, said Mr. Strange, and of these a landscape in water-colours, and a study of rocks at Pozzuoli, were shown upon the screen. Among a miscellaneous collection of drawings and sketches acquired by the South Kensington Museum, said Mr. Strange, were found some battered fragments of studies which he believed were those submitted by Stevens in the competition for the fresco decoration of the Houses of Parliament. A condition of the competition was that competitors should supply an example actually worked in the material. That by Stevens was a scene from Richard III. Copies only of this were in existence, the originals having been destroyed. Other fragments of drawings prepared most likely for the earlier competition of 1843 had also been discovered. These were of figures for four corners of a circular composition, illustrating certain portions of Milton's "Paradise Lost," and Spenser's "Faerie Queene." Stevens, after his return to England, gave evidence on a committee of enquiry into the training given at the School of Design. Stevens was master

here only for two years, and he left in sympathy with the headmaster. He said that there was but one course in the Academy—a course intended for painters, and consisting mainly of the study of the human figure. There was no instruction in design. "Pupils," said Stevens, "generally enter the Academy with the intention of becoming artists; the study of the human figure is therefore the great feature of their education. Some of these, towards the completion of their studies, are by their natural disposition or by circumstances led to turn their attention to ornament with their already acquired knowledge; but little special study is sufficient to make such men excellent ornamentalists. In this manner Italian designers are made."

At the Italian academies, continued Mr. Strange, the average period of studentship was ten years. In the course of the enquiry this point also was considered. One of the witnesses (Mr. Townsend) had said he thought two years long enough for the acquirement of a sufficient degree of technical skill for the purposes of a designer. Stevens was asked his opinion. "If," he said, "by technical skill he understood the power of being able to copy well, either in drawing or painting, a form which is put before you, it appears to me that when a man has attained that he has finished his studies."

Again: "I think that technical skill depends upon the knowledge of a pupil. I think a pupil will never be able skillfully to put down, either in painting or drawing, any form which he is not

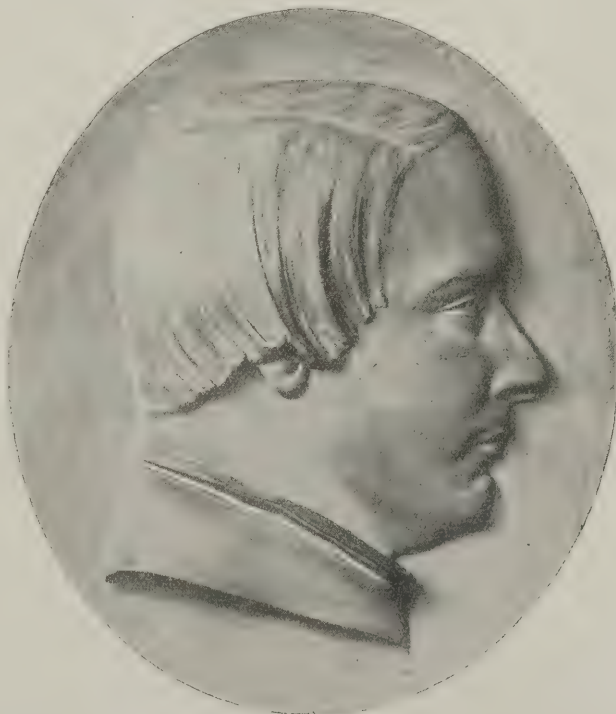
perfectly acquainted with. I hardly think that manual dexterity comes from anything but from a boy being very certain in his own mind what he is about to do." He said that a preliminary school course of four years "at least" was necessary for the young designer.

In 1847, continued Mr. Strange, Stevens obtained a commission to decorate a portion of Deysbrook House, in West Derby. The story was told that Stevens having postponed the work again and again, at last set off and arrived a fortnight before the end of the time allowed for its completion. The three rooms were finished in time, and remained perhaps the most remarkable examples of mural decoration in this country. Whether or not it was a fact that the work was executed at so rapid a rate, he did not know. Many careful studies for the decorations were now in South Kensington Museum. (These drawings were then shown upon the screen.)

Stevens's design for the gates to the Geological Museum, in Jermyn Street, were unfortunately never carried out. These remarkable gates were based upon his Florentine studies.

When Stevens returned to England it was his intention to become a portrait painter—or, at least, a painter; but he drifted instead into various forms of design. (Examples of his work, such as a rose-water sprinkler, a table centre, Indian knives, and candlesticks, were then shown.)

His use of the human figure in industrial designs was one of Stevens's strongest and most interesting characteristics. No Englishman ever made use of it to greater advantage. He was particularly fond of arranging figures round a central stem, and many beautiful candlesticks designed in this way were now in South Kensington Museum. Much of Stevens's industrial work was, in the speaker's opinion, rather over-elaborated, though the ornament was invariably executed



PORTRAIT OF ALFRED STEVENS BY WILLIAM ELLIS.

(From the Original Medallion owned by Messrs. Hoole, of Sheffield.)

with wonderful precision and skill. His designs for street lamps were not very well known; but these all showed a serious attempt to beautify a purely utilitarian object. He did not overload them with ornament, and he seemed to have accepted the conventional form of lamp at the top.

In 1850 Stevens went to Sheffield and worked for Hoole and Son. For this firm he designed fireplaces, grates, stoves, and other objects of utility, all of which he invested with what hitherto had been unheard-of importance. These designs created quite a sensation at the Exhibition of 1851. (A design for a grate with two fire dogs, the original of which is now in the Victoria and Albert Museum, was then shown.)

slide of the plaster model of the door-knocker for Dorchester House, Mr. Strange said that the work, as executed in bronze, had lost much of the effect of the original design. This happened so often in Stevens's work; many of his designs which had been carried out failed to fulfil the expectations raised.

Dr. Holford gave Stevens the commission to decorate portions of Dorchester House, not in 1853, as was stated by Stannus, but in 1856. Stevens at that time (a year before the Wellington Monument controversy) was not such an unknown man as it was customary to believe.

A well-known contemporary periodical contained the following appreciative remarks:—

circumstances there is no fear as to the result; nor, we should think, that all the apartments will not eventually be placed in Mr. Stevens's hands. . . . We have often had occasion to speak of Mr. Stevens's work in ornamental art with high praise. The style in which he is strongest is Italian (so called), the most appropriate, on the whole, for English houses of the class of Dr. Holford's; yet he is no servile copyist—his compositions, though fully imbued with the full and fervid character of the Italian school, are yet no mere *refaccimenti*—he thinks for himself. In any other European state he would have achieved by this time a much wider celebrity than has yet fallen to his lot. This arises from no shortcomings on his



DESIGN FOR THE DECORATION OF ST. PAUL'S CATHEDRAL, BY ALFRED STEVENS.

Sincerity, thoroughness, and a genuine love for his work, continued Mr. Strange, distinguished all Stevens's details of household furniture; and if they had been required for his greatest efforts they could not have been more brilliantly conceived. (Among the examples now shown were panels in blue tiles for one of his stove designs—at present in the Tate Gallery—a pair of finger plates for folding doors, and the lion which was made for the British Museum railings, and which was also included in the Wellington Monument in St. Paul's.) Showing a

"We are much rejoiced to hear that the internal decoration which is now about to enhance and complete the structure [Dr. Holford's House, in Hyde Park] is likely to be in the hands of an Englishman—and of one who, we are quite sure, will perform his part worthily. Mr. Stevens, of Kensington, is already entrusted with the decoration of the dining-room, with respect to which he is given a *carte blanche*, and this with the full concurrence of the architect (Vuliamy), which speaks well for that gentleman's liberality of feeling. Under these

part, but from the fact of there being no proper status yet for an ornamentalist in this country—at least, for a British one. We trust, however, that will ere long cease to be the case, and that ornament—without a strong feeling for which, we reiterate, there can be no true union of the arts—will have its rank acknowledged. The success predicted in the present instance will give it aid, . . . inasmuch as our impression would not hesitate to vent Mr. Stevens's powers in his own style by the side of those of any living ornamentalist.

alist, and this notwithstanding that he may be generally known to the public by the assistance he has given in the best class of ornament connected with stoves and grates than by his other compositions. . . . As regards Mr. Stevens, we believe him equal to any efforts in high-class Italian ornament; for which he possesses also the peculiar advantage of being equally successful in his efforts of colour as in those of form, thus grasping a far wider and more varied range than would otherwise be the case."

Stevens's work for the 1851 Exhibition—continued Mr. Strange—added much to his reputation, and when he came almost at once to the performance of some of the great work upon which his fame chiefly rested, he was by no means an unknown man. It was rather uncertain whether Stevens had ever exhibited at the Royal Academy. He (Mr. Strange) had found by consulting the entries in the Academy Catalogue for 1856 that a "Mr. A. Stephens" had exhibited a drawing of the interior of a church. This might conceivably have been Stevens. He was personally inclined to think it was, because this was the only exhibitor that year who failed to communicate his address. This seemed to point directly to Alfred Stevens.

Continuing, Mr. Strange said he had tried to obtain admission to Dorchester House, but had failed. The privilege was perhaps not unreasonably denied, but one could not help wishing that, wherever possible, Stevens's work might be made accessible to the public. Steps should certainly be taken for the preservation of Stevens's own house at Havering Hill, and of the decorations at Deysbrook. It should be possible to do something in both cases.

Stevens was associated with Digby Wyatt in the design of a pavilion to be set up at Paddington Station, but the work was never carried out. For the Crystal Palace he did two ceilings in the Italian Courts; what would be the future of these was a matter for serious consideration. Another outlet for Stevens's energy was the designing of majolica ware, some of which had been acquired by the Museum in 1864. At South Kensington he was responsible for the tables in the refreshment room (except for the marble tops), and he also prepared the design for one of the large heating coils. Stevens did not do anything in the decoration of the Museum; this was chiefly done by Sykes and his fellow pupils. Stevens would have nothing to do with the decoration of the old part of the Museum. He would look in during the evenings when the designs were being prepared, converse for a little, and perhaps make a few suggestions, but nothing more.

It might be safely asserted, continued Mr. Strange, that no finer design for a certificate had ever been prepared than that which Stevens designed for the International Exhibition in London, 1862. The wood-engraving was made by W. J. Linton, a pupil of Stevens while he was master in the School of Design. Sketches by Stevens for the Memorial for the 1851 Exhibition were then shown. The competition was held in 1857 and settled in 1858, after a particularly acrimonious discussion. Stevens's model was now in the Museum. It represented four continents joining hands round a central shaft, and showed the finest form that this favourite motif of Stevens's had ever reached. A series of bas-reliefs ran round the shaft, beneath the soffit of the cornice, the size of

which member was perhaps not excessive when it was regarded as a protective shelter for these bas-reliefs. It was probable, also, that a bigger base would have been provided than that which appeared in the model.

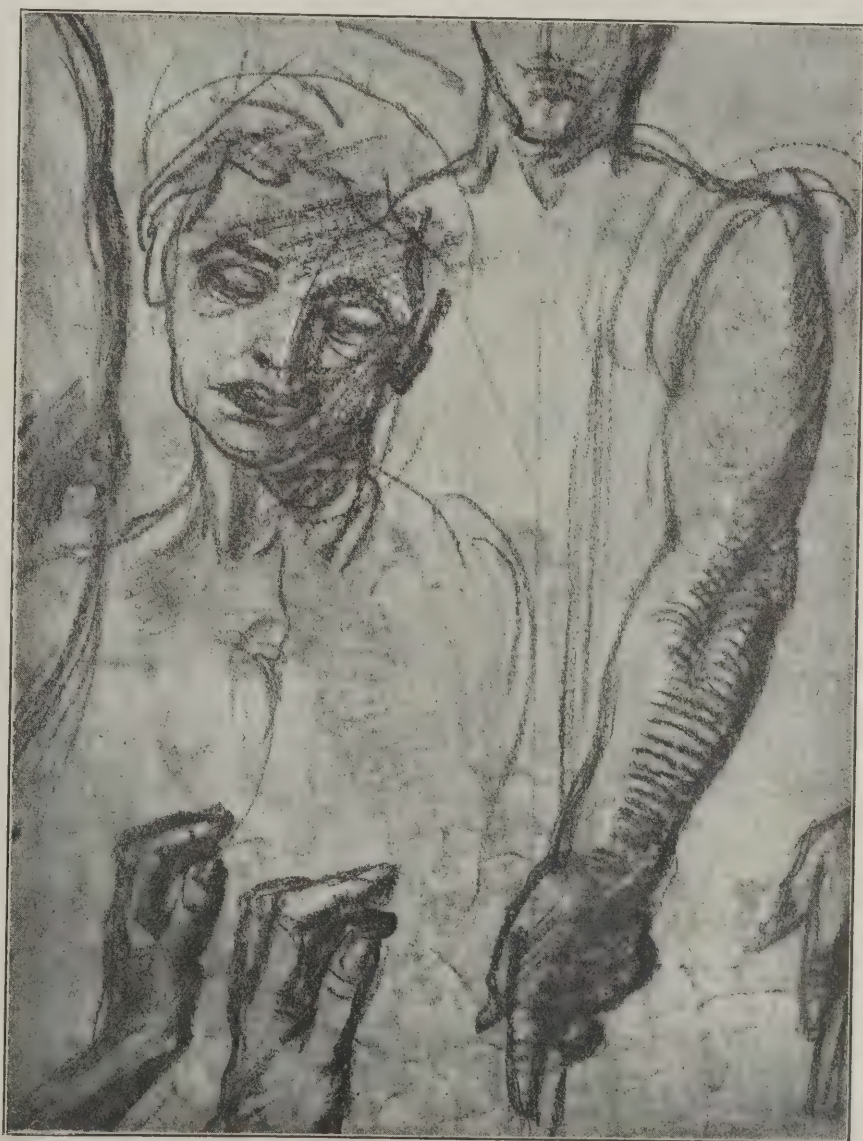
The figures on the Dorchester House fireplace, thought Mr. Strange, were the second best that Stevens ever made. To him, however, they conveyed an impression almost of discomfort; as a design, nevertheless, the execution was marvellous.

[The plaster model of this fireplace, now in the Museum, was shown upon the screen, and among the many other examples of Stevens's work that were shown and described by Mr. Strange were the following:—Decorations for St. Paul's Cathedral; alternative sketch designs; detail tracing by Stannus for portion of filling of the dome; studies or models for Isaiah, Jeremiah, and Daniel, and a sketch for Joel and Jeremiah, and many sketches and studies of details.]

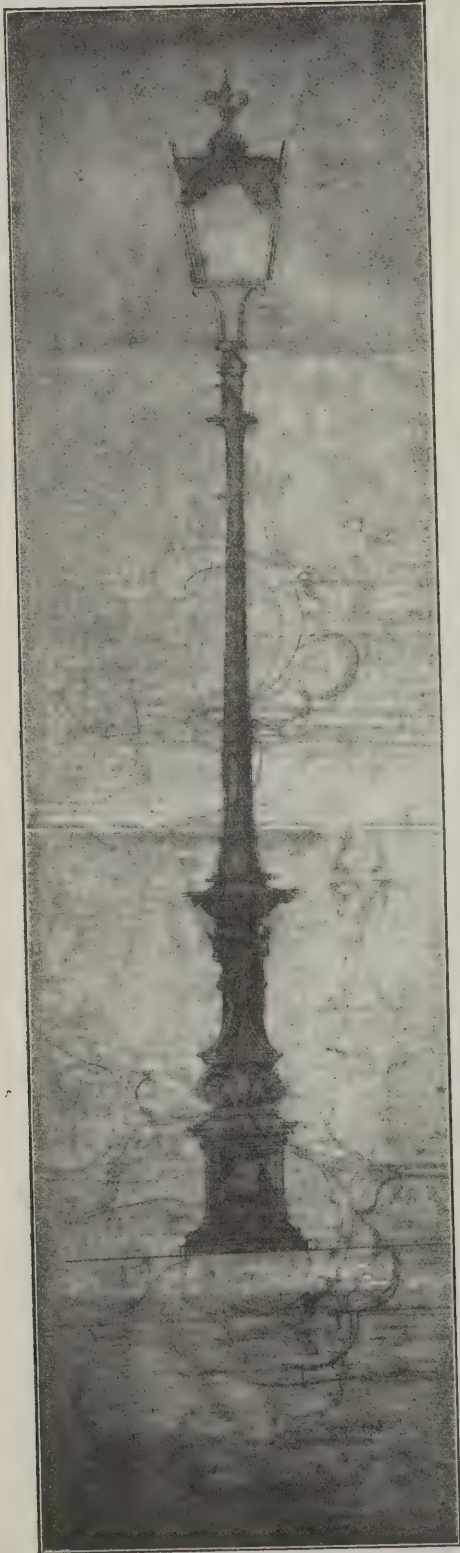
Mr. Strange then turned to the Wellington Monument, showing a sketch design, a perspective, a model, a view of the completed monument, the figures of Valour and Cowardice and of Truth and Falsehood, and models and sketches of the

equestrian figure. For comparison with this last, Mr. Strange showed the statue of Gattamelata, Padua, by Donatello.

Within the short space of time at his disposal, Mr. Strange said, it was only possible to give but a brief sketch of the history of the Memorial to the Duke of Wellington. A sum of £20,000 was left over from the amount voted for the State funeral of the Duke, and with this money, combined with a sum of £5,000 which had previously been voted by Parliament for the purpose, it was proposed to set up a memorial in St Paul's Cathedral. Sir William Molesworth, then First Commissioner of Works, invited four sculptors—Baily, Foley, Gibson, and Marochetti—to compete for the commission. Only Baily and Foley competed, and their designs were rejected by the Commissioner, who refused to consider offers to modify them to his satisfaction. The immediate result was an acrimonious public discussion, inspired by the conviction in the minds of many artists that it was intended to give the work to the Court favourite—Count Marochetti, the "Baron Marofatti" of "Punch" of those days. Sir Benjamin Hall, Molesworth's successor in office, was bombarded with memorials and letters demanding, not



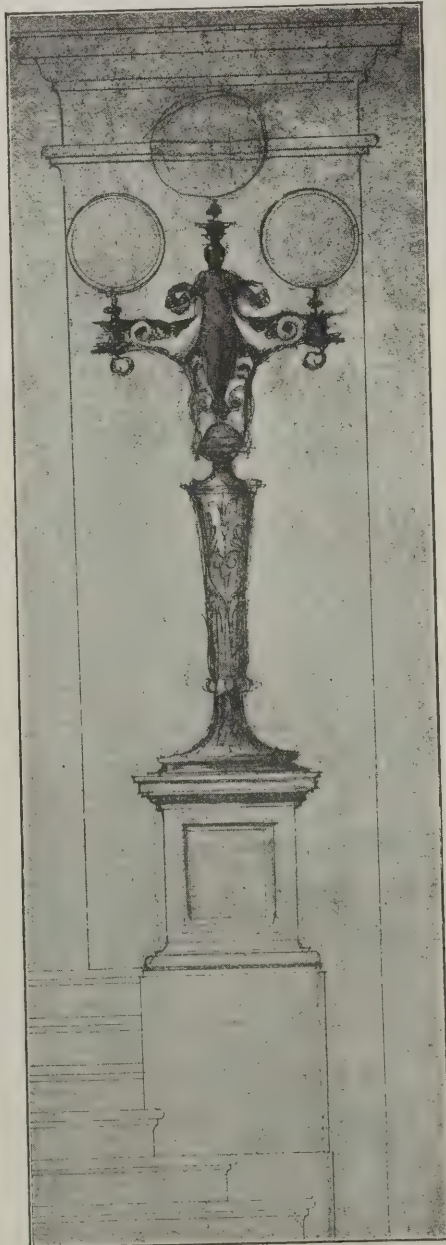
A PORTION OF THE STUDY FOR THE CARTOON OF JOEL (DESIGN FOR THE DECORATION OF ST. PAUL'S CATHEDRAL), BY ALFRED STEVENS.



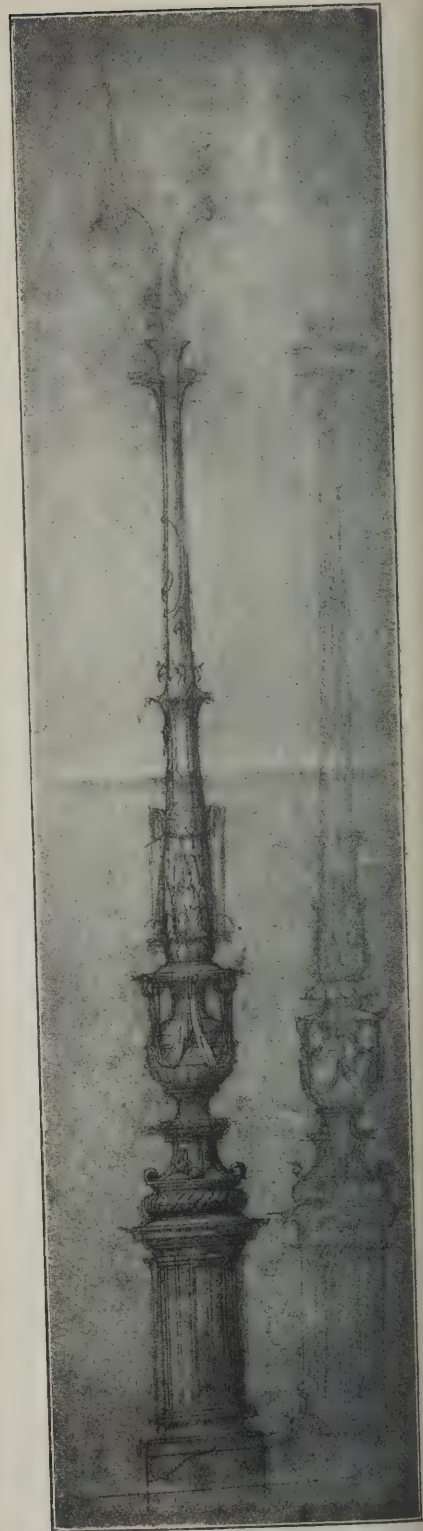
DESIGN FOR A LAMP STANDARD.
BY ALFRED STEVENS.

unreasonably, the employment of British artists. A new competition, open to artists of all nations, was then instituted, and it was arranged that models should be publicly exhibited in Westminster Hall before a decision was arrived at. The conditions were announced in September, 1856, a plan being issued with them, showing the proposed situation of the memorial under one of the arches on the north side of the nave of the Cathedral. For this competition Stevens entered. The Victoria and Albert Museum fortunately possessed not only his original sketches on the plan issued by the Office of Works, but also the actual model sent in for the competition and included in

the exhibition at Westminster Hall, which opened on July 20th, 1857, under the motto, "I know but of One Art." This was No. 18 of the 83 models which complied absolutely with conditions designed to secure equality of judgment. The committee appointed to make the awards consisted of Lord Lansdowne, the Rev. H. H. Milman (Dean of St. Paul's), Lord Overstone (a financier), General Cust, Mr. Gladstone, and Mr. Cockerell; the Committee thus representing both Houses of Parliament, the Church, the Army, High Finance, and Architecture. The Committee reported that "Mr. Cockerell, the only one of the appointed judges professionally connected with the arts—though we have derived from him valuable assistance and information in the progress of the examination—has declined taking a part in the ultimate decision." The architect having washed his hands of the business, the other authorities proceeded to award the prizes, as follows:—Calder Marshall, R.A., £700; W. F. Woodington, £500; E. G. Papworth, £300; Giovanni Dupré, of Florence, £200; Mariano Folcini and Alisse Cambi, of the same city, £100; Alfred Stevens, £100; M. Noble, £100; E. J. Hähnel, of Dresden, £100; and T. Thorneycroft, £100. A



DESIGN FOR AN ENTRANCE LAMP.
BY ALFRED STEVENS.



DESIGN FOR A LAMP STANDARD.
BY ALFRED STEVENS.

significant paragraph in their report was to the following effect:—"We have not considered ourselves bound to take into exclusive consideration the peculiar fitness and adaptation to that spot in St. Paul's Cathedral which appears to be in contemplation for the erection of the proposed monument; which consideration might possibly have led to some difference in the selection." They further suggested that on this point experienced artists should be consulted.

Lord John Manners then became First Commissioner of Works, and he announced in Parliament, in June, 1858, that he and Penrose had decided upon Stevens' design. On September 9th, 1858, they asked for a full-size model, and this was duly prepared.

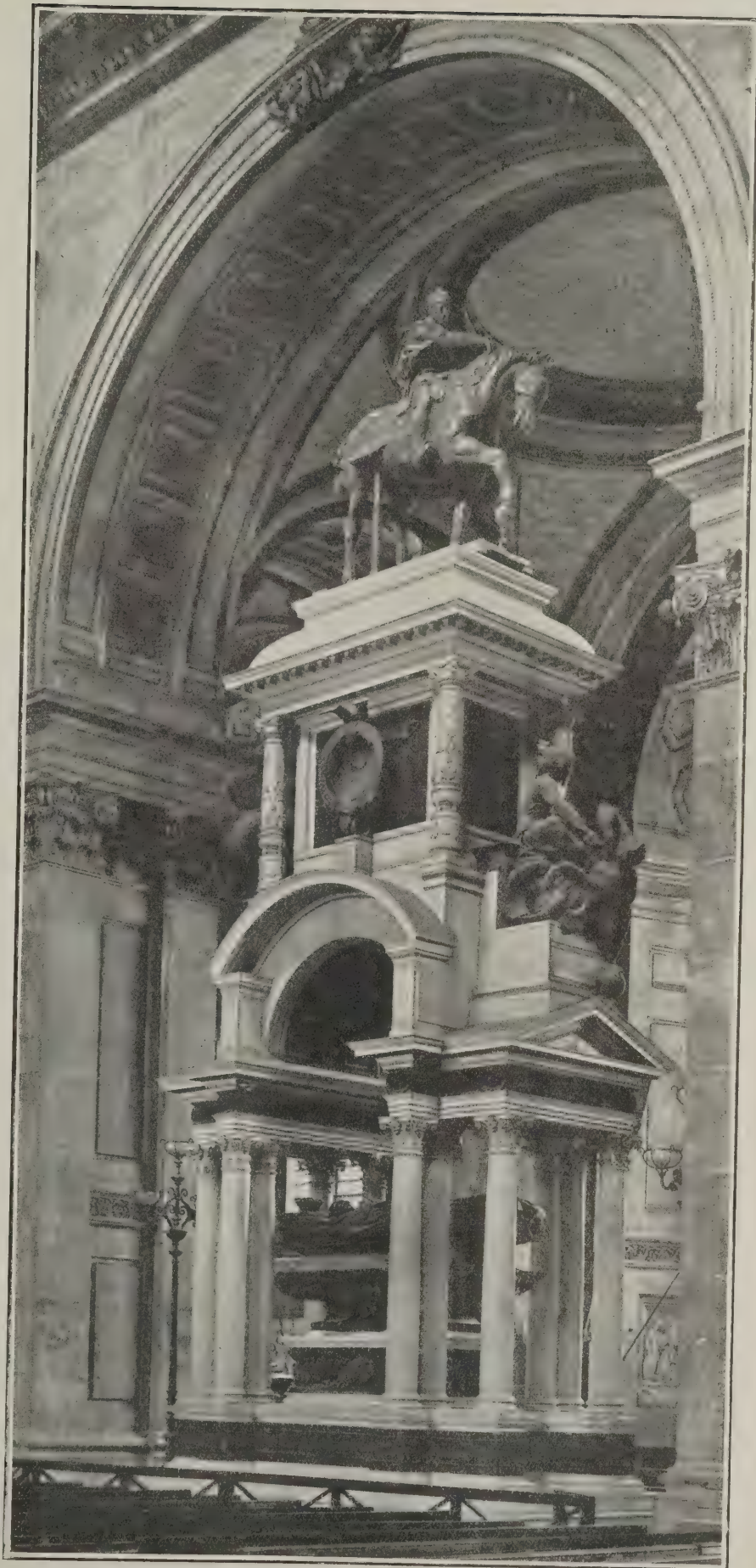
Offering a few critical remarks upon the monument as carried out, Mr. Strange said he thought that the loss had been chiefly in the treatment of the upper portion, and in the figures. The upper storey seemed to have become rather heavy, when compared with the model, and the big projecting moulding would probably tend to obscure the equestrian statue when placed in position. Personally he would have liked to see the monument erected in the open air. The monument was originally in the Chapel of SS. Michael and George, which it was at one time proposed to make into a Wellington Chapel. Penrose was to be employed to make it suitable for this purpose, and a distinguished artist was to be commissioned to do the paintings, but nothing ever came of the proposal. Mr. Strange then quoted from contemporary criticisms of the monument. One of these read as follows:—

"Mr. Alfred Stevens's is one of the loftiest designs in the competition. An open arch rises upon a picturesque cluster of twelve isolated columns, supporting a rich pedestal, high above which stands the bronze statue of the Duke. Two groups of sculpture at the sides represent Truth crushing Fraud, and Valour quelling Cowardice; the two vanquished figures being flung out from the pile with a boldness and terrific spirit. Still, this monument is in the main architectural; it is in three stages—the first, an enriched base made up of twelve columns, which support an entablature bearing an enriched frieze, from which rises a semicircular-headed arch, the soffit of which is elaborately panelled. Over this arch the next stage is supported by four moulded columns; and from the ends of this stage are flung the strange figures we have referred to. Above this stage, on a plain entablature, but enriched pedestal, is an equestrian statue of the Great Duke. If, however, the monument is to be placed beneath one of the arches of St. Paul's Cathedral, this design—arch within arch—will be objectionable. The decoration of this monument is very elaborate; but we do not admire the selection or arrangement of the objects upon the sides of the sort of altar-tomb, upon which is placed the recumbent figure of Wellington."

Another criticism said:—
"The least worthy of the three, and indeed the least worthy of the nine, is that of Mr. Stevens. Built up in storeys of disjointed architectural members intended for quite other purposes, reminding one somewhat of the curiously and painfully raised fabrics sometimes seen on the floor of a nursery, with a formal altar-tomb inserted below, an equestrian figure at the top, and certain violently composed figures projecting midway from its sides, its uninteresting materials put together with scarcely so much design as to satisfy the requirements of constructive security, entirely destitute of dignity and repose, exciting no feeling in common with the character and associations of the Duke, it towers up so high an architectural pile as would completely block up the recipient archway, and would, if erected, constitute the heaviest, most inconsistent, and least suggestive structure that could well be conceived for such a purpose."

The "Critical and Descriptive Catalogue" of the Exhibition of the models contained the following:—

"'I know but of One Art.' A fine piece of Venetian architectural splendour, most admirable in its restrained richness, and well studied in its light and shade. Erected in a provincial square it would



THE WELLINGTON MEMORIAL IN ST. PAUL'S CATHEDRAL, WITH ALFRED STEVENS'S FULL-SIZE PLASTER MODEL IN POSITION.



DONATELLO'S "GATTAMELATA" AT PADUA.

be the pride and crown of the place. The bronze statue high in the air—the open arch below—the pillars—the crown—the crushed figure of War squeezed under his shield—are full of spontaneousness and originality."

Other criticisms from contemporary journals were as follows:—

"There are three other prizes of £100 each; and these have been given severally to No. 12, the work of two Florentines, MM. Mariano Folcini and Ulisse Cambi;

No. 18, that of Mr. Stevens; and No. 21, contributed by Herr Ernestus Julius Hähnel, of Dresden. Of these three, the award to the Englishman is unquestionably a mistake. On no possible principle of judgment can we understand how this work came to be singled out from such a collection as this—and least of all for such a purpose."

"No 18 is essentially architectural, and is carried to a great height. . . . Against the end of this [second] stage

are groups of figures that would puzzle a conjuror to make out what they are intended to represent; they may be Satan reproving Sin, or the Death of the Dragon of Wantley, or anything else you may choose to name. Reaching beyond these nondescripts, on a plain entablature, and to crown the whole, on an enriched pedestal, sits the Duke, on, we presume, Pegasus."

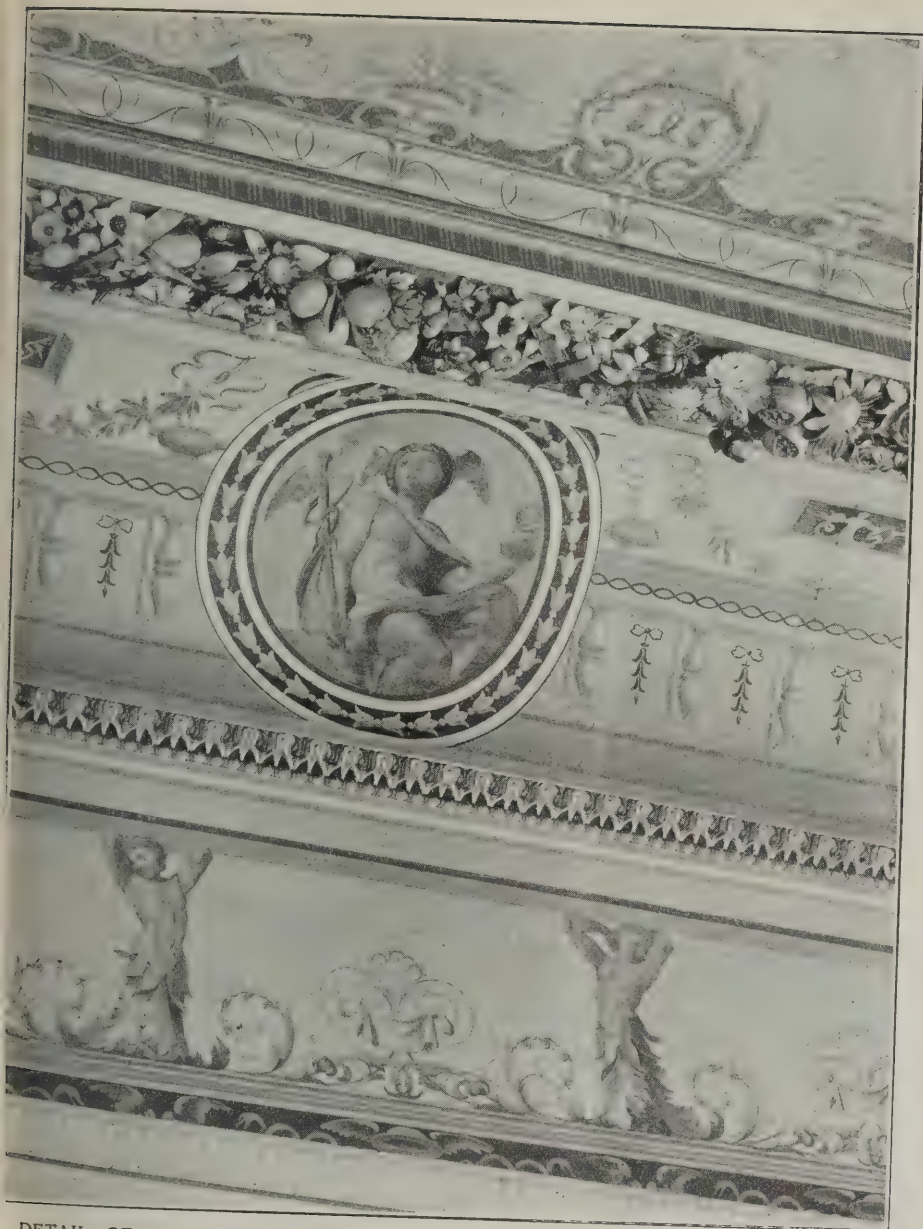
Continuing, Mr. Strange said that Stevens's model for the equestrian figure showed the Duke holding a cocked hat in his outstretched hand. There might be historical justification for this if the story he had heard was true, that Wellington had decided to hold out his cocked hat in his right hand as a prearranged signal for the advance at Waterloo.

Stevens must almost have thought with his fingers; they seemed to keep pace with the working of his great intellect. His restless mind was working ever through his eyes and hand, and was always striving to realise form. He had extraordinary perseverance in trying subjects over and over again in endless variety of arrangement.

Concluding, Mr. Strange said he would show one piece of Michelangelo's work, the tomb of Lorenzo de Medici, which had more in common with the finest work of Stevens than anything else of which he knew, and which, very strangely, hardly suggested any figure that Stevens ever drew. Stevens arrived at a pitch of ideality and abstraction which was not altogether inferior to that of Michelangelo. The Italian master worked under totally different conditions—amid a community of artists and art-lovers, at perhaps the most glorious period of Italian art. But Stevens was Early Victorian. If ever there was a voice crying in the wilderness, it was that of Alfred Stevens



GENERAL VIEW OF THE LARGE DRAWING-ROOM AT "DEYSBROOK," NEAR LIVERPOOL (NOW A CHILDREN'S HOSPITAL), SHOWING DECORATIONS BY ALFRED STEVENS.



DETAIL OF CEILING DECORATION IN LARGE DRAWING-ROOM, "DEYSBROOK,"
NEAR LIVERPOOL, BY ALFRED STEVENS.

the finished little work, and, like many other artists, was hopeless as a business man. But he lived life for his "One Art."

DISCUSSION.

Sir Charles Holroyd said he would most willingly propose a vote of thanks. Mr. Strange said that Michelangelo worked in a community of artists; he did, but nevertheless he was very solitary. When, for instance, he had finished part of the Sistine Chapel, and although the Pope was quite satisfied, Michelangelo said he was afraid that the times were unfavourable for art.

The door for the Geological Museum, continued Sir Charles, always struck him as better than that by Ghiberti, and the reason that he (Stevens) understood form better, and had kept the construction in a far finer way. Stevens might have received from the Sistine Chapel his inspiration for his beautiful designs, which included the forms of children linked together. The candlestick in the right transept of St. Mark's was probably that upon which Stevens used his design for a candlestick with winged figures around. Referring to the curious fact that casts seldom or never

realised the excellence of the first sketch, the speaker said that this was always the case, even with the finest workmen. Donatello's bronzes, for instance, were afterwards worked and chased with hammer and file. The seats in St. Paul's Cathedral, in the speaker's opinion, detracted from the effect of the Wellington Monument, and should be taken away.

Mr. D. S. MacColl, seconding the vote of thanks, said he was glad that the various studies and sketches by Stevens were shown to an enlarged scale upon the screen. Their effect was much better realised. Some of Mr. Strange's criticisms seemed extremely acute, but he was not disposed to agree with them all. Mr. Strange was of course a staunch upholder of Stevens's fame. Again, they had to thank Mr. Strange for the additional knowledge concerning Stevens's early life. The drawings which were thought to have been sent in for the competition at the Houses of Parliament were, said Mr. MacColl, now definitely known to have been for that competition. With regard to Deysbrook, Stevens did not make the drawings in a fortnight. He had the whole scheme planned out completely in his mind before starting for Deysbrook, and, arriving there, had rapidly produced

the decorations on the walls with the aid of two assistants.

In doing little things Stevens was rather too elaborate; but in big things all the exuberance fell away, and the subject came out in all its beautiful plain perfection. The friendly notice quoted by Mr. Strange bore the mark of one of the few men who really knew Stevens's worth, but who did not represent the general opinion. Recently Mr. James White-law, an architect who took the Silver Medal of the R.I.B.A., came back from Italy, and went to see the Wellington Monument in St. Paul's. He was so overwhelmed with Stevens's work that he made a complete set of drawings of the monument and presented them to the Stevens Society.

The story about the cocked hat was not legendary, but historical, and Stevens had it definitely in mind when he designed the monument. With regard to the monument, he was inclined to agree with some of its critics. The original design was perhaps finer; and of course it should be remembered that the first intention was for the monument to be carried out wholly in bronze, but marble was subsequently decided upon. The face of the marble arch, too, was to have been covered with bronze hangings.

Mr. W. Strange said that Stevens possessed one rare quality—he was a great draughtsman. Technically his drawings were masterly, easy, and certain, and were hardly excelled by any Italian draughtsman at any time.

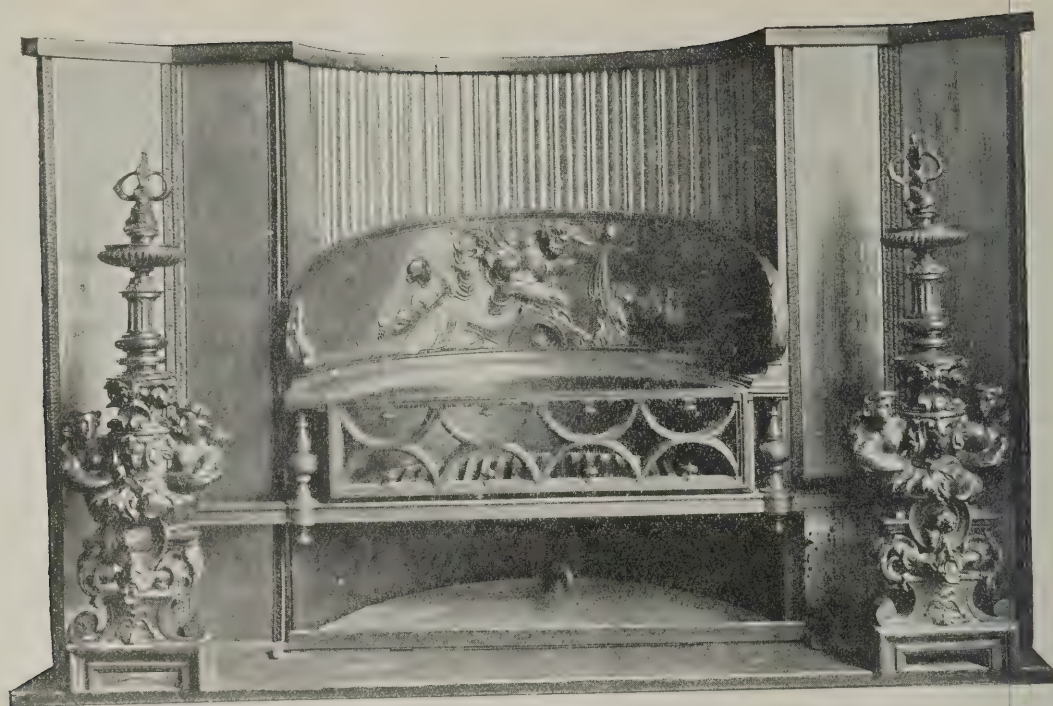
Mr. W. R. Colton, referring to the great difference between models and finished productions, mentioned as an instance, the lions designed for the British Museum railings. The mane of the lion was literally gouged out in grooves, and he thought Stevens must have been bitterly disappointed. He would like to know whether the plaster model was in existence. He himself had a model which was infinitely finer than the finished work. In the door-knocker to Dorchester House they saw the same defect—the design was ruined by the reproduction.

Mr. Strange, in the course of a brief reply, said that Mr. Drury told him Dalou had criticised Stevens's work with great admiration, but said it always struck him that Stevens did sculpture like a painter. Stevens had two great friends at the time—Cockerell and Penrose—who secured him the commission for the Wellington Monument.

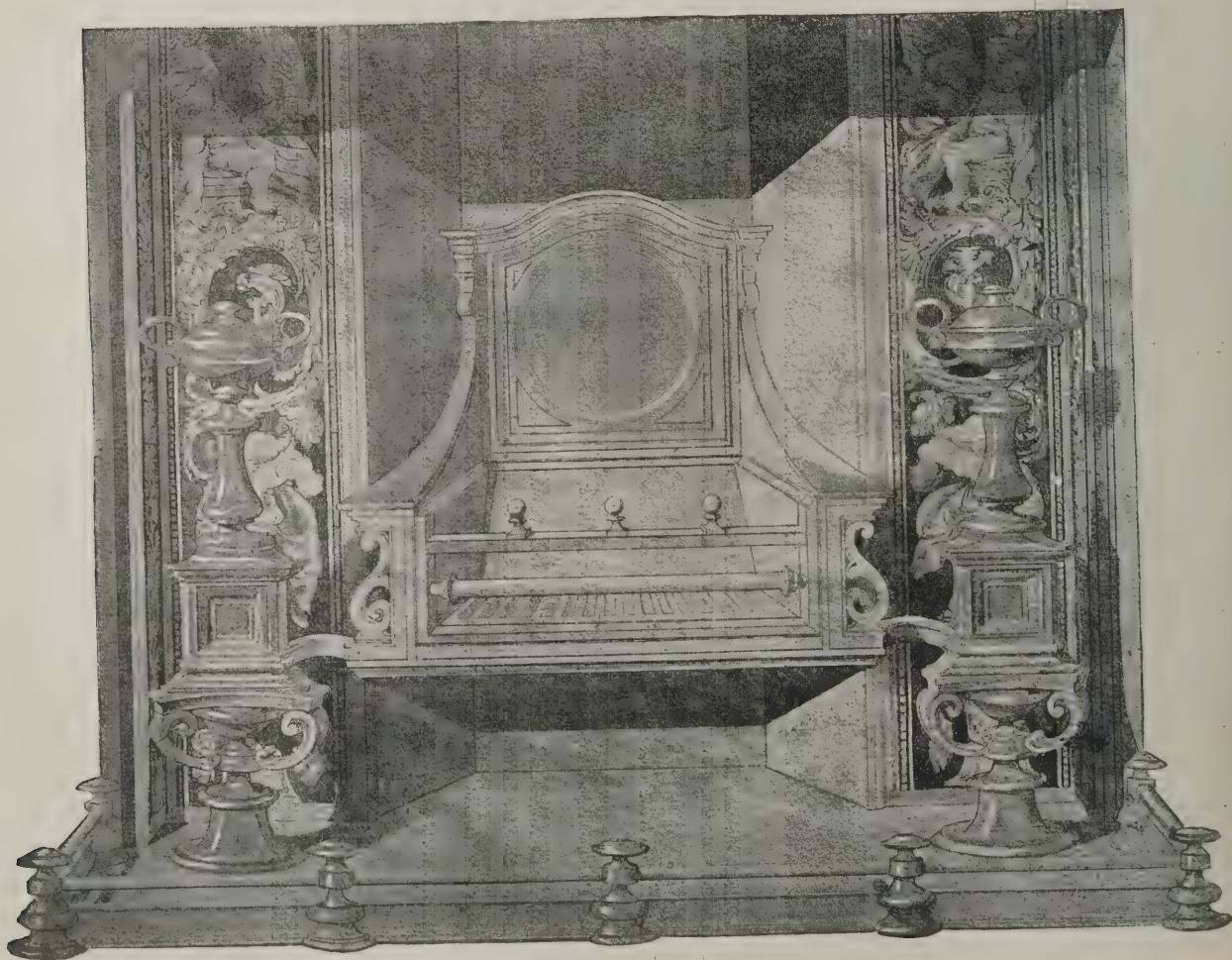
By the courtesy of Mr. Strange we are able to reproduce a number of the designs which accompanied his lecture. The original drawings are now on exhibition at the Victoria and Albert Museum, South Kensington. We are also indebted to Messrs. Henry E. Hoole and Co., Ltd., of Green Lane Works, Sheffield, by whose kindness we are able to reproduce a portrait of Stevens and some of his designs for firegrates. For nearly eight years—from 1850 to 1857—Stevens devoted a considerable portion of his time to designing and modeling grates, fenders, and similar work for Messrs. Hoole, who had the perspicacity to recognise the talent of a genius who, as frequently is the case, was not regarded at his true worth until after his death.

The bronze equestrian statue which is to complete the Wellington memorial is now finished, and it is hoped to have it fixed in position by St. Paul's Day, January 25th.

The monument was originally to have been surmounted by an equestrian statue, but this was opposed by Dean Milman.

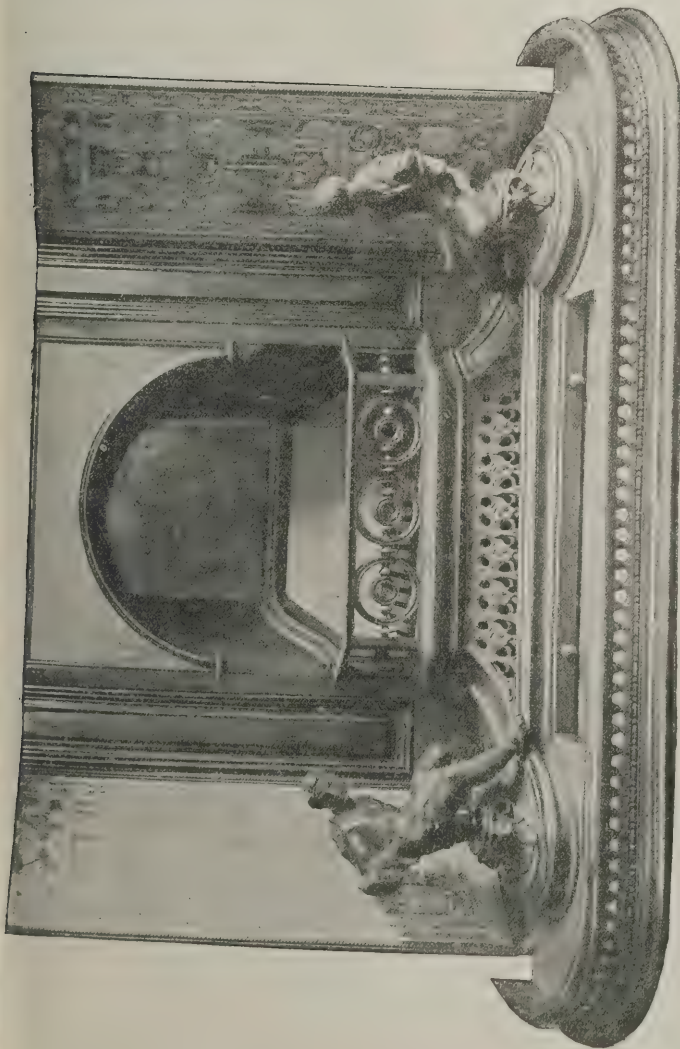


This fine grate was made by Messrs. Hoole, of Sheffield, for the International Exhibition of 1862. The panel on the back represents "The Rape of Proserpina." The casing is relieved with vertical strips of ormolu at the angles.



The panels to this grate are shown in detail on the next page.

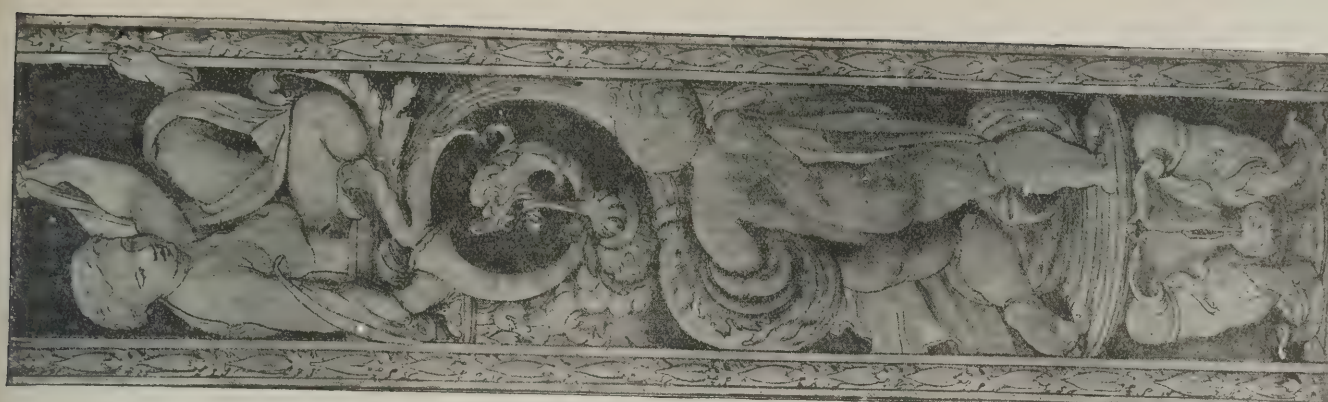
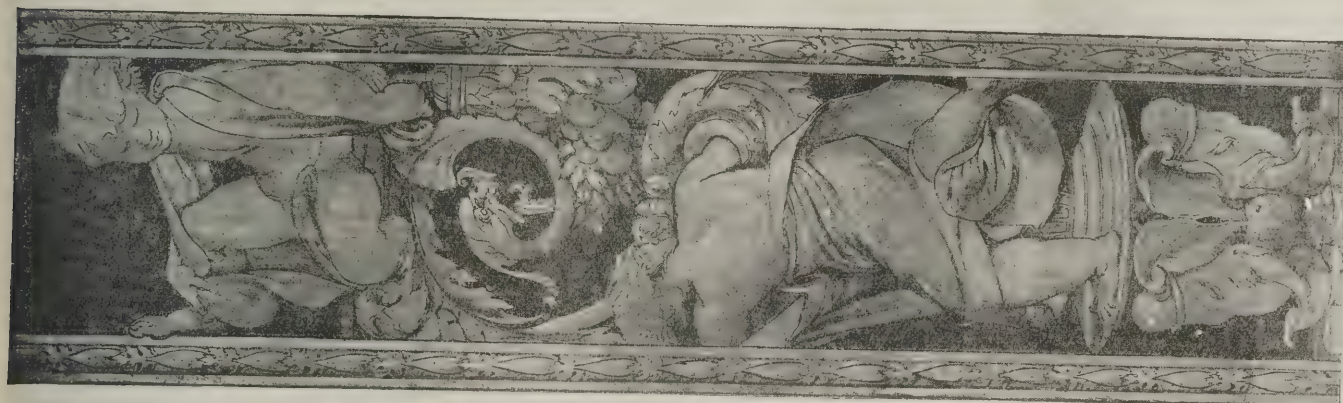
FIREGRATES EXECUTED FROM DESIGNS BY ALFRED STEVENS.



This grate and fender are executed in "armour bright" iron, the figures, serving as "dogs," being of cast bronze with ormolu enrichments at the bases.



FIREGRATES EXECUTED FROM DESIGNS BY ALFRED STEVENS.



These are Stevens's original cartoons for the blue and white porcelain panels to the grate shown on the preceding page.

Before his work was completed Stevens died. The statue which will crown Stevens's work has been designed by Mr. John Tweed from Stevens's unfinished sketch. The necessary funds are being collected privately by a committee, and the amount is almost in hand.

The exhibition of works by Alfred Stevens at the Tate Gallery, Millbank, which was to have closed on January 14th, will remain open until the latter part of March, the lenders having consented to extend the period of their loan in view of the great interest taken by the public in the exhibition.

MAGAZINES AND REVIEWS.

A considerable part of the "Art Journal" issue is devoted to an article by M. Salomon Reinach on "New Facts and Fancies about Leonardo da Vinci." "The Work of William Kent at Rousham" is, judging from the illustrations given, hardly worth an article; it is poor, commonplace stuff. The editorial article on the "Æsthetic Conditions of To-day," with its ill-natured and rather vulgar sneer at the Royal Academy, is neither very wise nor in very good taste. The "Art Journal" used to be on the side of rational and learned art; apparently now it is to uphold all the eccentricities of the day as representing the true art. This, to be sure, is to be in the fashion.

The "Burlington Magazine," in an editorial article, suggests, as a system of providing for the securing of national art-treasures for this country, that in the first place the annual grant to the National Gallery should be raised to £25,000, instead of the present absurdly inadequate £5,000, but that this increase should be voted as an annual increase to £10,000, and in addition to this a lump sum of £500,000 with interest at 3 per cent., which capital sum might be drawn upon, in case of necessity, for the purchase of any one of a certain selected list of masterpieces. "When this sum is used up the income of the National Gallery would have sunk to twice its present amount; but in expending the lump sum it is to be hoped that the greater part of the supremely important masterpieces of early art in the country would have been acquired, and the remaining £10,000 a year might well suffice for the building up of that much-needed collection of masterpieces of nineteenth-century art which is badly needed for the inspiration and guidance of artists in this country." It is not a bad idea. Something must at any rate be done to enable the National Gallery to purchase works which would otherwise be sold out of the country, or we shall gradually lose our most valued art-treasures. Is it any use hoping that some owners of great works might learn to be so patriotic as to refuse to sell them to the foreigner? That would be one way out of the difficulty. The new craze for Chinese art is illustrated in a long article on the contrast between a St. John the Evangelist by Titian and a picture of a Chinese saint, to the effect that the one is totally unreal and the other represents a Chinese saint as the painter saw him. This may be quite true, but it does not alter the fact that the one is a noble figure and the other a mean and ugly one; but that is apparently to be considered as of no consequence.

The "Architectural Record" (New York) is a very interesting number.

It contains an article on "The New San Francisco," with a number of illustrations of the new buildings, among which the typical high building of America seems less prominent than one might have expected, though the Humboldt Bank building takes the form of a high tower, not badly treated architecturally. The writer of the article, Mr. A. C. David, says that the old San Francisco was "a most winning and entertaining place, the least American of the larger cities of the United States," and that it contained a number of buildings of real architectural distinction, designed and built early in the 'fifties. The new San Francisco, judging from the illustrations given, will also contain some buildings of architectural distinction, though their quality is rather unequal. It is rather surprising to see that the complete classic columnar type of architecture is largely adopted for offices as well as for banks. The office of Messrs. Balfour, Guthrie and Co. is a square front with the windows between Doric columns. The buildings in which the columnar order is not used are not very refined in detail, but they are mostly what may be called sensible architecture, suited to the occasion. Following this is a very enthusiastic article on the Liverpool Cathedral, accompanied by a number of photographs, some of them showing the vaulting in progress, with the method of building the centering. We take it that the writer, Mr. Wilberforce Horsfield, is an Englishman; it would have been perhaps more interesting to have seen how the work strikes an American eye; but we think he is right in his conclusion that "Liverpool and Westminster Cathedrals are both well worthy to go down to posterity as examples of twentieth-century ecclesiastical art." Though the Liverpool Cathedral adopts the forms and details of mediæval architecture, it is no mere imitation; the plan and a great deal of the architectural treatment are quite new and original, and the interior of the Lady Chapel, the only finished portion, is a really fine piece of modern Gothic. The only thing we do not like in the illustrations is the reredos over the altar; the decorative cresting to this is far too exuberant. A piece of original architecture of quite another type is illustrated in an article on "The People's Savings Bank at Cedar Rapids, Iowa," by Mr. Louis Sullivan, an architect who evidently thinks for himself—perhaps a little too much; but the result in this case is certainly interesting. The fourth of a

series of articles by Mr. Sloan on the architectural treatment of concrete structures deals with "Concrete in Landscape Gardening." He shows that concrete can be very well used for small decorative fountain basins; the four illustrations of these are very good, and quite suitable for concrete; but in other illustrations the forms adopted are only imitations of masonry—a mistake constantly made in these cases. The grouped "columns for the Pergola," with their coarsely profiled cap and base mouldings, are very bad. To design characteristically in concrete, it is necessary to forget masonry forms altogether; which the designers obviously find it very difficult to do.

The "Nineteenth Century" contains an important article by Mr. D. S. MacColl on "The National Gallery; its Resources, Problems, and Administration." The problem, is, of course, how to secure the best pictures which are in the market, and prevent their being bought out of the country. He raises the question whether the expenditure of money by American millionaires in paying enormous prices for old pictures is a temporary craze or is likely to be a permanent condition; in the latter case, as he says, no mere raising of the annual grant to the National Gallery to £25,000 or even £50,000 will be of any practical use; the only thing is to fund a sum of a million to be drawn upon as necessity arises. Another point to be considered is to give greater power of independent action to the Director, so as to enable him to purchase at once, if necessary, without having to take the opinion of the Board of Trustees. That the trustees should be (as has been proposed) a committee of experts, he deprecates, and rightly; they would only differ among themselves and hamper the action of the Director. Another point which Mr. MacColl makes is that the reason the British Museum is so well served is that the head of each department has under him assistants who are also experts, going through a training which qualifies them to become heads of departments in their turn. He suggests that the same system should be established at the National Gallery, so that a new director may come to his post after a life of preliminary training for it.

The "National Review," which seldom touches on anything so frivolous as art, has an article by Mr. Austin Dobson on "Louthborough, R.A." whose well-composed but very artificial landscapes were at one time in considerable favour, and



THE PEOPLE'S SAVINGS BANK, CEDAR RAPIDS, IOWA.
LOUIS H. SULLIVAN, ARCHITECT.

may still be seen at dealers' exhibitions and loan exhibitions, but who also worked largely in London theatres as a scene-painter; as he had been intended for an engineer, he probably had acquired some technical knowledge which was of use to him in designing scenery. He was a Dutchman by birth, but at thirty settled in London and became practically an Englishman. As little is known of him, the article is of some interest, and a good deal of notice of contemporary events and people is worked into it.

In the "Contemporary Review" is a good article on Ruskin by Mr. Basil de Selincourt; an endeavour to state, in a sympathetic spirit, what was the real value of Ruskin's message to his generation, apart from the weaknesses of picturesque verbiage and wrathful exaggeration which, as the writer fully perceives, were Ruskin's weaknesses as a teacher, both in regard to art and life. It would take too much space to summarise his conclusions here, but the article is worth reading.

The "Century" gives a plan, illustrations, and a description of the Lincoln Memorial which it is proposed to erect at Washington, for which Congress has authorised an expenditure of two million dollars. The site recommended is an

admirable one, placing the memorial close to the Potomac river, on a site on the central axis of the Washington Memorial and the Capitol, which latter is at the opposite extremity of the vista. The proposed monument, of which Mr. Henry Bacon is the architect, takes the form of a kind of Greek Doric temple, with its longer axis at right angles to the main axis of the site; it is completely surmounted by a colonnade, and above the plane of the solid wall, within the colonnade, rises a blocking, rather Roman than Greek in style, with a frieze of garlands between each of which is the name of one of the States. The whole looks well enough, and is very refined in design, though it may be thought a pity that such a very American man as Lincoln should be commemorated in the architectural language, so to speak, of Greece and Rome. However, the classical idiom has been so fixed from the beginning on all the public architecture of Washington that perhaps it would be difficult to depart from it now without producing a discord.

"Scribner" contains an interesting article on "Abbey's last Mural Paintings," those made for the Pennsylvania State Capitol at Harrisburg. Some of them have been seen in London; one ("Penn's Treaty with the Indians") was exhibited a year or two back at the Royal Academy. The main and central picture is an "Apotheosis of Pennsylvania," containing portrait groups of the Pennsylvania worthies of past times. There are some interesting recollections as to the artist's life and his way of getting up materials for his large decorative works.

The "Antiquary" contains an article by Mr. Tavenor-Perry on "Hartlepool and the Church of St. Hilda," the commencement of an essay which is to be continued. A plan of the mediæval church is given; of the seventh-century church founded by St. Hilda there are no remains. Mr. D. MacRitchie (F.S.A.Scot.) contributes an article with a plan and section of a ruined earth-house on the South Uist (outer Hebrides); the centre compartment is circular and domed over, the domed portion (with horizontal joints) being carried on a series of arches supported on piers radiating from the centre with a narrow and lower passage round them. It is an interesting bit of prehistoric domestic architecture.

SOUTH LONDON TECHNICAL ART SCHOOL.

The annual report of the City and Guilds South London Technical Art School for the session 1910-11 shows that there has been a substantial increase in the entry of students during the year ending in July last, when the number on the register was 120, as against 103 in the previous session. The school, which is in the Kennington Road, can point to an extraordinary array of past students who have achieved high honour and distinction. Sir William Goscombe John, R.A., was, during the first decade of the school's existence, one of a group of students under Mr. W. S. Frith, in the modelling section, which included Sir George Frampton, R.A., Mr. F. W. Pomeroy, A.R.A., Mr. W. R. Colton, A.R.A., the late Mr. Harry Bates, A.R.A. Sir William Goscombe John studied at the school for three years previous to 1889, when he gained, like so many other students of the school, the gold medal and travelling studentship of £200 of the Royal Academy.

Of the House Decoration Section of the school, it is reported that last session's

work was of a most satisfactory character. Mr. W. K. Stevens, the teacher in this section, writes: "It is gratifying to find that there is more demand for really trained handicraft labour of all kinds, and in my opinion anyone thoroughly trained can find work at an ample remuneration."

NOTES FROM PARIS.

Contractors' Banquet.

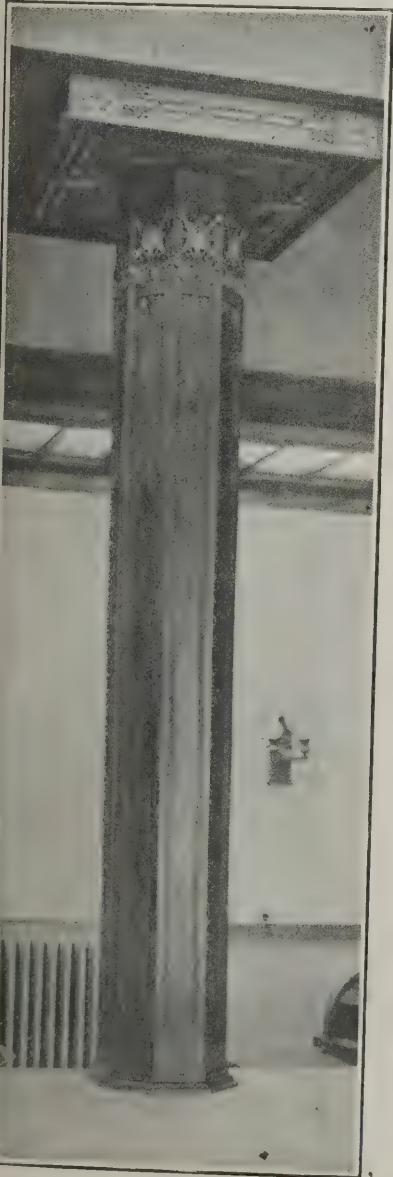
In Paris, they know how to dine; and the annual banquet of public works contractors (Les Entrepreneurs de Travaux Publics) supported this proposition. It took place at the Hotel Continental, M. Augagneur, Minister of Public Works, presiding. The President of the Republic, and the Ministers of Commerce, of the Colonies, and of Works, sent representatives, many senators and deputies were present, and the band of the 102nd Regiment made the music. Such functions seem to afford a capital opportunity of getting influential men by the ear, and M. Chagnaud, president of the contractors' syndicate, seems to have done justice to the occasion. He pointed out that in Paris a great deal of work that ought to be done was being neglected—in one quarter, for instance, the unfulfilled promise to lay down tramways was twenty years old. Also he demanded from the Government such action as would ensure the contractor entire freedom from molestation in his business. He demanded that all attempts at violence and sabotage should be put down with a firm hand. The reply by the Minister of Works need hardly be chronicled. It took the usual stereotyped form. He took a very sympathetic view of the need for further expenditure on public works, but regretted that the exigencies of the budget. . . . The formula is only too familiar. Also he condemned very indignantly the destruction of property by workmen, and even ventured on the quite definite pronouncement that "Le sabotage est odieux"! but he did not say what would be done to put a stop to it. Nevertheless, it was a great occasion. Cannot our British Institute of Builders, or Federation of Employers, persuade a few Cabinet Ministers and high public officials to "assist" at the annual banquets?

House of Retreat for Architects.

M. Lucien Leblanc, architect, of Paris, has conceived the idea of creating a house of retreat for architects, and is going to submit a scheme to the Central Society of Architects. Until the particulars are made public, the fancy plays round all sorts of wild possibilities—homes of rest, convalescent homes, almshouses, and what not. Whatever form for the *maison de retraite* may be suggested, its bare conception seems to indicate that the French are either a less proud or a more practical people than we are. In any case, developments will be awaited with interest; for it may quite possibly turn out that M. Leblanc's scheme is worth imitating.

The Prix de Rome.

The dates of the 1912 competition for the Prix de Rome have now been fixed: First sitting (12 hours' sketch), March 12. Second sitting (24 hours' sketch), March 15th. In each case the sketches will be judged on the following day. The *Loge* day is March 19th; and the exhibition for the final competition will be held on July 23rd, 24th, 25th, and



DETAIL OF COLUMN IN THE PEOPLE'S
SAVINGS BANK, CEDAR RAPIDS, IOWA.
LOUIS H. SULLIVAN, ARCHITECT.

27th; judgment being delivered on July 26th. The Prix de Rome, it may be recalled, was founded in 1720, and entitles the winner to a stay of three years in Rome at the expense of Government, with the certainty of a position as Government architect. The competition is open to all Frenchmen between the ages of fifteen and thirty, whether or not they are members of the Ecole des Beaux-Arts. The awards are given by a jury consisting of the eight architect members of the Institut, twelve other permanent members, and nine who are renewed from year to year.

The Gare de Grenelle.

The Paris Municipal Council has approved of the scheme for reconstructing the passenger portion of the Gare de Grenelle; towards the cost of which the city will pay a contribution of 35,000 francs to the railway syndicate of the Ceinture.

A Palace of Agriculture.

The Parliamentary Commission entrusted with the duty of enquiring into the project for building, in Paris, a Palace of Agriculture, has concluded its labours, and presented its report to the Government. Two projects have been put forward by the Commission. The first proposes the use of the site of the Halle aux Vins; the second, the building of the palais at the Champ de Mars. A third site is proposed by a minority of the commission, who suggest building on lands at the rear of the Ecole Militaire.

Palace of Justice, Constantine.

The awards in the competition for a palais de justice at Constantine, Algeria, have been announced. M. Dumoulin, of Algiers, is placed first, and will superintend the work. The project placed second is that of M. Richard, of Paris, who receives 3,000 francs; while the third premium, 1,500 francs, goes to M. Christofle, of Constantine.

A Fresco Class.

A course of instruction in fresco painting has been instituted at the Ecole des Beaux-Arts, with M. Paul Baudoin as instructor.

Society of French Artists.

The Société des Artistes Français has elected the following "bureau" for 1912: M. V. Laloux, architect, member of the Institut, president; M. Boisseau, vice-president; M. Dawant, vice-president; M. Louis Bonnier, secretary-reporter; M. Focillon, secretary-treasurer; MM. E. Renard, Georges Lemaire, Pascal (member of the Institut), and Jules Jacquet, secretaries.

A New Director of Works.

The new administrative director of works for Paris is M. Cacaud, prefect of the Ardennes. He succeeds M. de Pontich, who has been appointed receveur municipal of the City of Paris.

Garden City Exhibition.

An exhibition of the designs premiated in the competition organised by the Comité Départemental des Habitations à bon Marché de la Seine has been held in Paris, which has thus achieved its first Garden City Exhibition. The designs were on view for a week in the Salle Saint Jean of the Hotel de Ville, and no charge was made for admission, the object being to popularise the garden city idea. The first French garden city will probably be built in the department of the Seine.

Huge New Stores Projected.

Paris, already rich in large business buildings, is about to make two important additions to them. The two opposite corners of the Rue Royale, at the Made-



COTTAGES ON FARNHAM ROAD, GUILDFORD. DRAWN BY HAROLD FALKNER.

leine, have been respectively acquired by two rival syndicates, who are going to erect huge dry-goods stores, as they would be called in America. It is stated that the capital to be expended on these undertakings will amount, in the aggregate, to not less than two millions sterling, a considerable portion of which will necessarily be expended on the buildings, the architectural treatment of which will be regarded with considerable interest, as they should represent the *dernier cri*.

CORRESPONDENCE.

Cottages, Farnham Road, Guildford.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Of the cottages you illustrated in last week's issue, I send herewith an old drawing I made years ago while waiting for a train at Guildford. They are a delightful group, looking either up or down the road, and I am prepared to answer your question that they are perfectly sanitary and dry, as they stand up some 3 ft. above the pavement, and had, when I saw them, been recently redrained.

I do not think any words of mine can add to the splendid letter of the Master of Charterhouse to the "Times," or your leader thereon, but I can say that I know the road and the way in and out of Guild-

ford very well, and that this is *not* the place where the road wants improving.

There is a speed limit of 10 here, and at that pace the spot is not dangerous.

What is required is that the corner from the railway bridge should be taken off so as to let motor-traffic from Farnham into the North Street and a new road from the top of North Street into the London Road so as to avoid the High Street and Spital Street altogether.

Speaking of the cottages, the public would appreciate them more if the timber work which undoubtedly exists under the rough-cast showed. The main street is capable of respecting the old, and recognises timber houses as old. He is of course incapable of appreciating the beautiful, because he doesn't see it.

I do not for one moment counsel the removal of the rough-cast. As a matter of fact it simplifies the buildings and throws up their extraordinarily successful grouping. The importance of these cottages is as an auxiliary to the other most important buildings—Bull's, the Capital and County, the County Court, Town Hall Chambers. They help one to realise what an old town was like. They give strangers coming from the station just the impression they should have, that there is something good in Guildford, and that it may be, as it is, worth while to go on beyond.

H. FALKNER.



leted by John Tweed.



Alfred Stevens's Full-Size Model in Plaster



The Figure, in Bronze, completed by John Tweed

TRADE AND CRAFT.

Artistic Lighting Fittings.

It is not very often that a trade catalogue can be truthfully described as being really delightful. From Mr. W. J. Stokvis, of Arnhem, Holland, we have received a catalogue of lighting fittings, seventeenth-century replicas, in which these illustrations are beyond question artistically charming. Mr. Stokvis, whose business was founded some five-and-forty years ago, has gone to the museums and art galleries for his models, has selected these with true taste, and has copied them with the utmost fidelity, reproducing not merely the beautiful form of the original, but its spirit also. Gerard Terborgh, Frans von Mieris, Gerard Dou, Gabriel Metsu, Quentin Matsys, Nicolaes Maes, A. van der Werff, Jusepe de Ribera, David Teniers, and many another Dutch or Flemish artist, have been laid under contribution, the artists named being represented in the catalogue by reproductions of some of their pictures in which appear ceiling lights, lamps, or lanterns, of which copies have been made in three dimensions; and in each case the picture is shown in juxtaposition with an illustration of the object of which it has inspired the making. Mr. Stokvis, however, has gone farther afield than the Low Countries. Great Britain, Germany, Italy, and Spain have yielded him some choice examples of early design and craftsmanship in metal-work, with the result that his catalogue shows a fine range of choice, both in the object and in its treatment. With respect to each object figured—electrolier, lantern, candlestick, or what not—the source of the original is indicated, so that the authenticity of the design may be easily verified. The numerous candelabra are strikingly beautiful; and the quaint old-world charm of the beautifully proportioned lanterns or hanging lights, such, for example, as those taken from Gerard Dou's "Girl with the Burning Light," from Teniers's "Guardroom," and from Ribera's "Diogenes with the Lantern," is simply irresistible. The articles are made either in polished or oxidised brass, and are adapted for ordinary gas, acetylene, or electric light. Mr. Stokvis's beautiful work secured a gold medal at the Brussels Exhibition of 1910, and the Grand Prix at the Roubaix Exhibition of 1911. His English agent is Mr. E. C. Sparkes, 118 and 120, Wardour Street, London, W.C.

Vitreous Tiles and Mosaic.

Wall decoration, whether the building to be treated be public or private, offers many æsthetic opportunities, of which the architect is not slow to avail himself. The materials at command are so many and varied as to create some embarrassment in the choice. In considering the problem, it should be taken into account that while an artistic glass tiling may entail a greater initial expenditure than some other methods of finish, there is no doubt that its advantages are considerable. The vitreous tiles and mosaic manufactured by Messrs. Chance Brothers and Co., Ltd., of the Glass Works, near Birmingham, are of much interest because of their durability, entirely sanitary surfaces, brilliant tones, and the variety of colour marking that may be obtained, as well as their freedom from all possibility of crazing. The tiles are produced with regular edges for work requiring a tight

joint, and also with antique rough-cut edges; while moulded angles, cappings, and skirtings are produced, so that a complete scheme can be carried out in the material. For entrance halls, vestibules, staircases, bathrooms, fireplace surrounds, and similar work, they give an excellent effect; and when this material is used as mosaic, floors of indestructible character can be obtained. We are informed that samples may be had at any time on application to the manufacturers.

Standardisation of Shop-Fronts.

A remarkable development in shop-front fitting is announced. Messrs. E. Pollard and Co., the shopfitters, of Clerkenwell Road, London, E.C., have elaborated a system of standardising metal shop-front work, so that the parts are interchangeable and can be put together without difficulty by builders who are not specialists in shopfitting, and of which the price per foot run is a known factor. As Mr. E. Pollard points out, however, the standardisation of shop fronts, pricing them at so much per foot run, and supplying them complete for local fitting, are the bare outlines of the idea. The standardisation of parts effects enormous economies, because it gets rid of the heavy cost of preparing special dies and tools; whereas the standardised shop-fronts can be produced at the cost of metal and labour only. "We have an extensive plant of metal-drawing machinery," Mr. Pollard explains, "and by standardising our work, and arranging our metal workshops on scientific lines, we have cut down the cost of metal shopfronts until they are within the reach of the smallest shopkeeper in the smallest town." The most practical and successful patterns and sections have been selected for standardisation. Several styles are available, and much variety may be imparted by the use of bent returns, "island" windows, and other devices. The builder who is interested in the erection of shop property will no doubt be glad to avail himself of the advantages which Messrs. Pollard's system affords, of putting in elegant and attractive modern metal shop-fronts of which the cost can be so easily calculated beforehand, which bring business to the shop-keeper, and secure tenants for speculatively built shop property. The metal used may be brass, bronzed metal, gunmetal, or German silver; and Messrs. Pollard will be pleased to suggest plans and schemes, and to estimate costs, on receipt of measurements of frontage and an indication of the depth of lobby required.

LOCKWOOD'S PRICE BOOK.

The term "Price Book," which is a survival from early days, when its significance was not exceeded, has long ceased to cover adequately the variety of subjects included in a volume which has greatly outgrown its title. The prices no doubt remain a very important feature, but are perhaps less valuable in themselves than in the opportunity they afford of enumerating the resources that are at the disposal of the architect and the builder in the matter of materials, manufactures, and methods, the systematic entries under each trade marshalling for convenient review the innumerable units which collectively represent the forces at command; and these occupy about two-thirds of the volume. The remainder of the book is very usefully filled with tables and memoranda, the R.I.B.A.

building contract, legal notes, marks and qualities of wood, the texts of various building and public health acts and by-laws, and other matters of use and interest, which render it invaluable as a work of reference for architect and builder.

Lockwood's Builders', Architects', Contractors', and Engineers' Price Book for 1912. Edited by Francis T. W. Miller, A.R.I.B.A. With supplements containing the London Building Acts, 1894 to 1908, etc., etc. London: Crosby Lockwood and Son, 7, Stationers' Hall Court, Ludgate Hill, E.C. Pages clxvii.+488+vi.+260, 6½ins. by 4½ins.; price 4s.

OFFICERS' TRAINING QUARTERS.

The new Headquarters, Officers' Training Corps, Glasgow University Contingent, officially opened on January 12th by the Right. Hon. the Earl of Rosebery and Midlothian, Chancellor of the University, is built upon a portion of the playing-field, and fronts upon the building-line of University Avenue, adjoining the gymnasium buildings. The drill-hall is about 70 ft. by 43 ft., and a miniature range of 25 yds. is erected alongside, and equipped with the "Solano" target. The front building is of 2 storeys, and is faced with white stone. The ground floor comprises adjutant's room, infantry and engineers' orderly rooms, engineers' store, armoury, and also cloak-rooms and lavatory accommodation. On the upper floor are the officers' mess room, lecture room, and library, cadets' dressing-room, and large infantry store.

The plans were prepared by Messrs. H. and D. Barclay, architects, and carried out under Mr. Colin Sinclair, M.A. Professor Medley took an active interest in the inception and carrying out of the scheme, and was assisted by Captain A. N. E. Browne, adjutant, and the officers of the corps.

The contractors for the work were: Messrs. Robert Murdoch and Son, mason work; Messrs. Ferguson and Anderson, joiner work; Messrs. Peter White and Co., slater work; Mr. John McFeat, jun., plumber work; Messrs. William Tonner and Sons, plaster work; Messrs. D. Campbell and Son, painter work; Messrs. Ashwell and Nisbet, heating engineers, and Messrs. Brownlie and Murray, steel roofs. Mr. John Stitt, Master of Works to the University, superintended the erection of the building.

LONDON FIRES IN 1911.

The official statistics of London fire during 1911 show that during the twelve months there were 4,455 fires, an increase of 1,250 compared with the previous year, and the largest number known to the London Fire Brigade. During the exceptional summer the Brigade dealt with 50, 60, and even 70 fires a day, many of them on the commons and open spaces around London—an explanation that in a large measure accounts for an increase that might otherwise be regarded as alarming.

One hundred and twenty persons lost their lives at London fires during the year. Over 100 persons were rescued by the firemen from burning buildings. The fires included that in Sidney Street on January 3rd, when a superintendent received injuries which resulted in his death; that at the Carlton Hotel on August 9th, which resulted in the loss of one life; and that at Messrs. Bowater's paper warehouse, Seawitch Wharf, East Greenwich, on September 11th, which burnt for nearly a fortnight, and which caused damage estimated at £40,000.



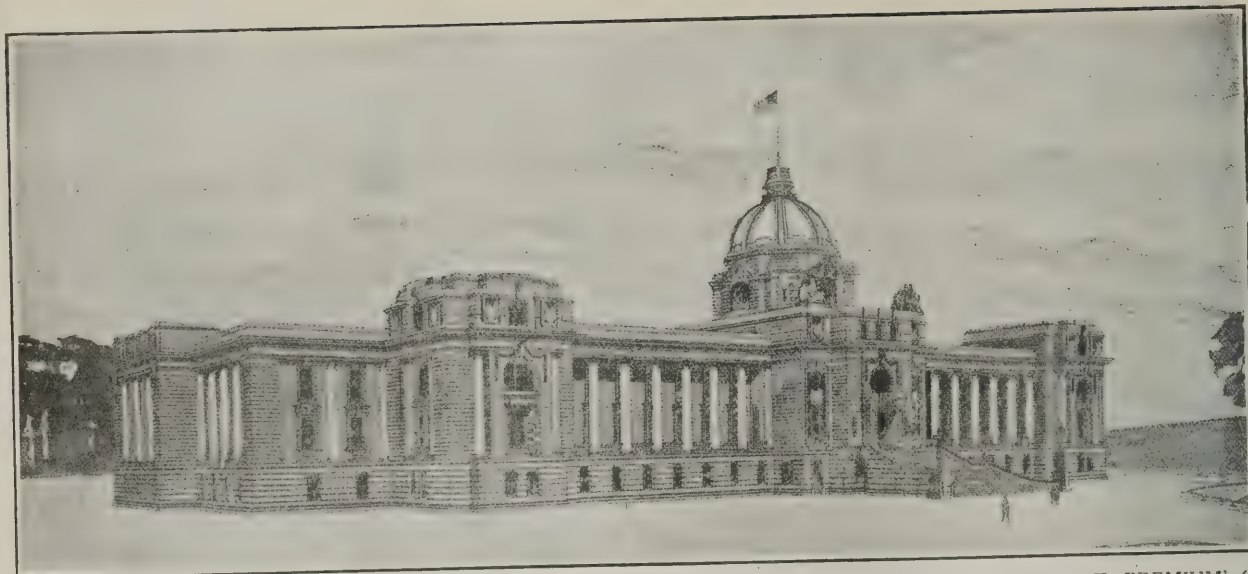
Side View.

ALFRED STEVENS'S FULL-SIZE MODEL IN PLASTER OF THE EQUESTRIAN FIGURE



Front View.

OF WELLINGTON FOR THE MEMORIAL IN ST. PAUL'S CATHEDRAL, LONDON.



PROPOSED NEW PARLIAMENT BUILDINGS, WELLINGTON, NEW ZEALAND: DESIGN AWARDED THE FIRST PREMIUM (£1,000).
J. CAMPBELL, F.R.I.B.A., F.N.Z.I.A., AND C. PATON, ARCHITECTS.

NEW PARLIAMENT BUILDINGS, WELLINGTON, N.Z.

Colonel W. L. Vernon, F.R.I.B.A., Government Architect of New South Wales, and the assessor in this competition, has made the following awards: First prize (£1,000), John Campbell and Claude Paton, Wellington; 2 (£500), Thomas Turnbull and Son, and J. S. Seddon, Wellington; 3 (£300), W. H. Gummer, Auckland; 4 (£200), John Campoell and C. A. Lawrence, Wellington. There were thirty-three competitors, and, in all, 327 drawings. A remark that would hold good for almost all important competitions is as follows: "The work of adjudication is not made easier by the apparent indifference of some authors to the important question of cost; whose designs for this reason necessarily lose ground." In the conditions it was stated that the cost was not to exceed £110,000. The drawings were to be executed only in pen and ink, without colour of any kind, excepting that a wash of colour might be applied on the plans and sections over the area of those portions of the building that are to be erected at a later date; while the elevations only might have shadows of a light monotone cast at an angle of forty-five degrees with horizontal and vertical planes to indicate projecting parts; and the door and window openings and roofs might have a flat pale wash of ink or of the monotone; but the walls on plans and sections were to be filled in with black indian ink only. Each competitor was required to furnish a typewritten report describing the building and stating the exact cubical contents with the estimated price per cubic foot, to include heating, ventilation, electric light, "and other works, structural as well as mechanical, necessary to fit the building for the reception of furniture, and the efficient fulfilment of its purpose." The efficient lighting, heating, and ventilation of the interior of every part of the building were to be considered as of primary importance. The building was to be designed "so as to afford reasonable resistance to fire and earthquake shocks, and provision must be made for the use of materials best adapted for these conditions."

The first three premiated designs are shown on this and succeeding pages.

THE ULSTER SOCIETY OF ARCHITECTS.

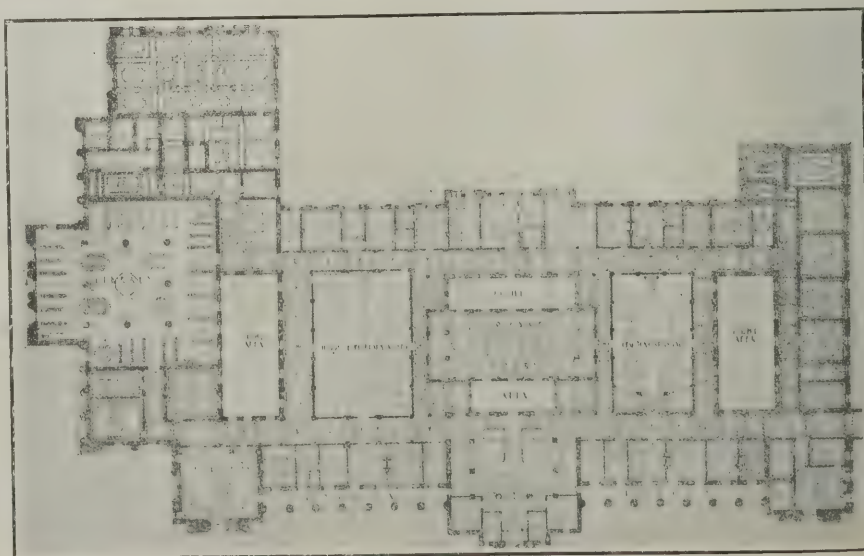
The above society held its annual general meeting on Monday, January 8th. There was a good attendance of members and associates.

Routine business being disposed of, the report of the Council for the year 1911 was submitted, discussed, and adopted, as follows:—"During the year 1911 the Council held six meetings, which were well attended. In addition three general meetings were held, to which all the members, associates, and students were invited. We regret that these general meetings were not better attended, and the Council hope that in future the members and associates will give practical support to the Society by taking an active part in the discussions and business arranged for the general meetings."

"During the year we received three resignations. It is therefore strongly urged on our junior members that those associates who are qualified for full membership should seek to be enrolled as

members, and take their proper place and standing in the ranks of the profession.

"At no time in the history of our Society has there been greater need, in the interest of the junior members, for co-operation and combined effort, with a view to improving the conditions of architectural practice, particularly in the interests of the younger members of the profession. Every week brings reports of the actions of the numerous district and urban councils who are carrying out, or proposing to carry out, small building schemes for labourers' and workmen's dwellings, and larger schemes for technical and municipal buildings and schools. In the great majority of cases the architectural work in connection with these schemes is entrusted to road surveyors, builders' clerks, and country surveyors' assistants, or others. The Board of Works and other controlling Government bodies have sanctioned and approved of such persons being employed as architects, thus frustrating the purposes and intentions of those who originally framed the provisions of the Labourers' Act. The



PROPOSED NEW PARLIAMENT BUILDINGS, WELLINGTON, NEW ZEALAND.
PRINCIPAL FLOOR PLAN OF FIRST-PREMIATED DESIGN.

results of such policy on the part of the local Government Board are to be read in the reports of badly designed and badly built houses, necessitating an excessive annual outlay in repairs or reconstructions.

"With such warnings in view, we find that during this year several rural and urban district councils have rescinded previous resolutions and have appointed architects assistant county surveyors, who had already accepted office on condition that their full time should be devoted to their duties as surveyors. Such appointments are remunerated at rates that would be a positive loss to any unqualified person who would faithfully and conscientiously carry out the duty attached to these appointments.

"During this year the Belfast Corporation Bill has passed Parliament, and will in due course result in a revision of the existing by-laws in force in this city. Such by-laws will be likely to affect architectural practice and the interests of building owners. It is of extreme importance, not only to architects, but also to building owners, that competent consideration should be devoted to the framing of such by-laws, which will have far-reaching results, either for good or evil, in the future progress, both architectural and commercial, of our city. We have been assured that your Society will have the opportunity of considering the draft by-laws before the same are presented to the City Council for final adoption.

"The interests of the members will be safeguarded as far as possible by your Council, but it is earnestly requested that every member of the Society will loyally co-operate with and support the Council in every possible way.

"The matter of affiliation with the I.B.A. has been further pressed, and it is hoped that within a reasonable time this will be accomplished."

The Hon. Treasurer, Mr. Houston, submitted a statement of accounts for the year, which showed the Society to be in a satisfactory financial position.

A discussion arose as to the best means of furthering the objects of the Society, and some recommendations were made to that effect to the incoming Council.

Reference was made to municipal undertakings, as the proposed Art Gallery, and the proposed competition for workmen's dwellings.

Mr. McDonnell referred to the candidature of Mr. Gilliland for membership of the City Council, and proposed "That the Society learns with pleasure of the candidature of W. J. Gilliland, F.R.I.B.A., for Victoria Ward, knowing, as it does, the attention and expert knowledge he will bring to further all the interests of the city in the large expenditure about to be entered into in municipal undertakings, and the Society trusts that Mr. Gilliland will be successful in his candidature." The motion was passed with acclamation.

Ballot papers for officers for the coming year were then opened by the scrutineers, resulting in the election of officers as follows:—President, H. Seaver, B.E.; Vice-President, J. J. McDonnell, J.P.; Council, W. J. Gilliland, F.R.I.B.A., F. M. Young, F.R.I.B.A., and N. Fitzsimons, F.R.I.B.A. Associate Members of Council, T. W. Henry and J. Seeds. Auditors, F. H. Tulloch and James Ferguson; Hon. Treasurer, E. R. Kennedy, F.R.I.B.A.; Hon. Secretary, Thomas Houston, Kingscourt, Wellington Place. The Corresponding Committee of Derry Architects to elect two members of Council in addition to above.

A SUB-CONTRACTOR'S CLAIM.

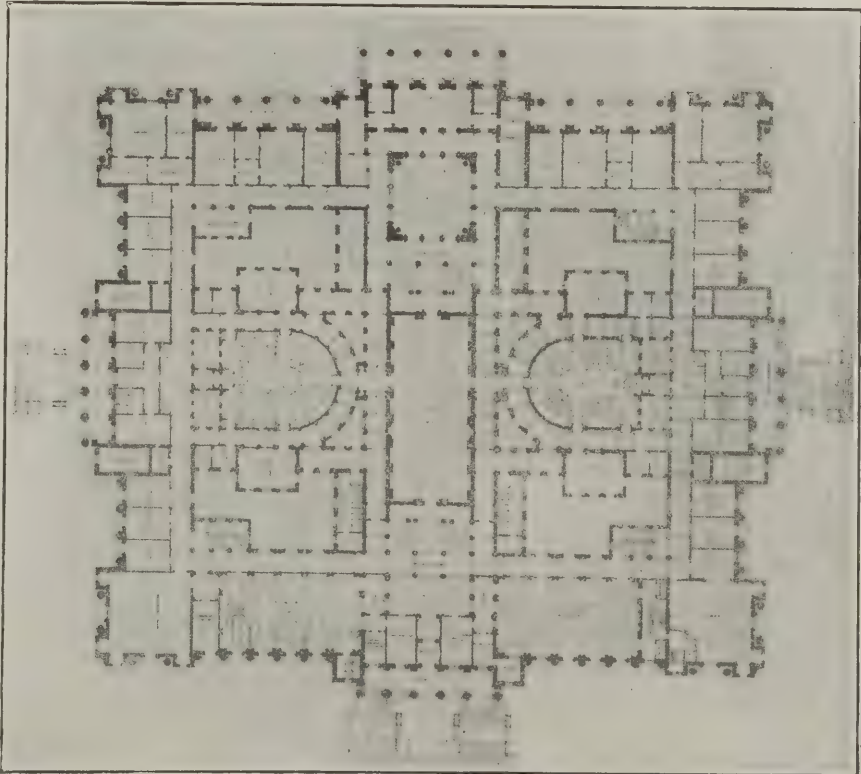
A case of interest to builders came before His Honour Judge Bonsey at the South Shields County Court on Thursday of last week. Mr. Thomas Anderson of that town, master plasterer, sued Messrs F. H. Heath, Ltd., of Manchester, contractors and builders, for £52 18s. 1d., in respect of extra work on a contract which he had with the latter to plaster the new Empire Theatre at Chester-le-Street.

Mr. Anderson was represented by Mr. W. H. Hope (of Messrs. Ritson and Hope, Sunderland), and Messrs. Heath were represented by Mr. E. J. Meynell, barrister-at-law, instructed by Messrs. J. Hislop and Son, of Manchester.

Mr. Hope stated that there was a contract to plaster out the auditorium from dado height, and to cover with fibrous plaster the roof principals, and to supply a fibrous plaster proscenium for the sum of £114 2s. The work was described

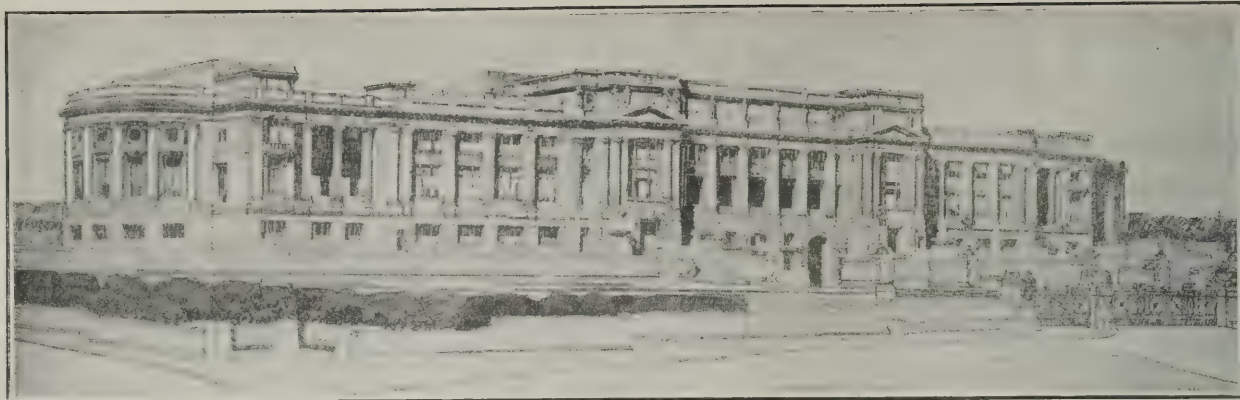
by the architect, from whom the plasterer got the details on which he based his price, and to which he made his fibrous work. Owing to a variation in the radius of the arch of the principals from the sketch supplied to the plasterer, the fibrous work would not fit, and key blocks were inserted at the joining of the sections of the moulded cornice, and further plastering was necessitated, and was done with the concurrence of Messrs. Heath's foremen on the job. As the dado should have been carried out in pressed brick, and was built in common brick, it was agreed that the dado would be rendered in cement. Rooms which should have been cleaded were got ready for plastering, and Anderson's men, on being told by Heath's men on the job that the rooms were ready, plastered them out without further orders. There was also a claim for overtime worked at defendants' request.

Mr. Hope contended that Messrs. Heath had constituted the architect their agent,



PROPOSED NEW PARLIAMENT BUILDINGS, WELLINGTON, N.Z.:
DESIGN AWARDED THE SECOND PREMIUM (£500).

THOMAS TURNBULL AND ISON, F.R.I.B.A., F.N.Z.I.A., AND J. S. SEDDON, ARCHITECTS



PROPOSED NEW PARLIAMENT BUILDINGS, WELLINGTON, N.Z. DESIGN AWARDED THE THIRD PREMIUM (£300).
WILLIAM H. GUMMER, ARCHITECT.

and that Messrs. Heath's representatives on the job were competent to agree to the extra work due to defendants' deviation from the plan, though defendants contended that plaintiff should have taken his measurements from the building itself. The account had never been disputed, but had been embodied in the builders' account and rendered to the architects by the defendants, with directions to the architect to pay it. The architect had agreed to payment for the work which he had considered was not in the builders' contract, providing also for the builders' profit, but had refused to pay the items of extra work, on the ground that he considered that the work was necessary to be done before Heaths could be said to have carried out their principal contract, and they had been paid all that was due on that contract.

Mr. Meynell contended that the defendants never ordered the work, and that their representatives on the job had no authority to place any such orders or to confirm the architect's action in any respect, and that the architect was the agent of the building owners, and that if he had pledged anyone to payment for the work, it was the building owners. He contended that the price for the extra work to the principals was excessive, and disputed the order for overtime to be worked.

After a lengthy hearing, His Honour, in summing up, said Mr. Meynell contended that plaintiff could not recover because he could not produce an order in writing given by Mr. Heath himself, the managing director of the defendant company. As a general principle, that contention was right; but a foreman under certain circumstances has some authority, and he may consent in the interests of his master to slight deviations or substitution, and even order goods of a small nature. It might be that if the case depended on that the judge would not be inclined to find for the plaintiff at all. It would be too doubtful and too dangerous to admit such authority of the foreman; though in this case there would be no objection to a foreman ordering work, having regard to the fact that, in the defendants' interests, great pressure was being put on plaintiff to hurry with the work. "Owing to the principals living such a distance from the job there could be no objection to the foreman giving small orders. The architect in the contract was not the agent of the building owners. He was Heath's agent. Heath says he relied on the architect to see the work carried out properly. The architect thinks the work properly done as extra work, and Anderson ought to be paid for

it by Heath, who may or not be in a position to recover from the theatre company. . . . I must say that there is very strong evidence of the complete ratification of the acts of the foreman and architect. . . . But as to the price I shall make the deduction of £5 from the £19 charged. As to the other items, which are smaller, and depend upon the foreman (with the exception of the dado) they are disposed of as Heath's orders." The judge disallowed the last two items of £3 10s. 6d. and £1 5s. 1d., the deductions making, in all £9 15s. 7d., and gave judgment for £42 19s. 6d. with costs.

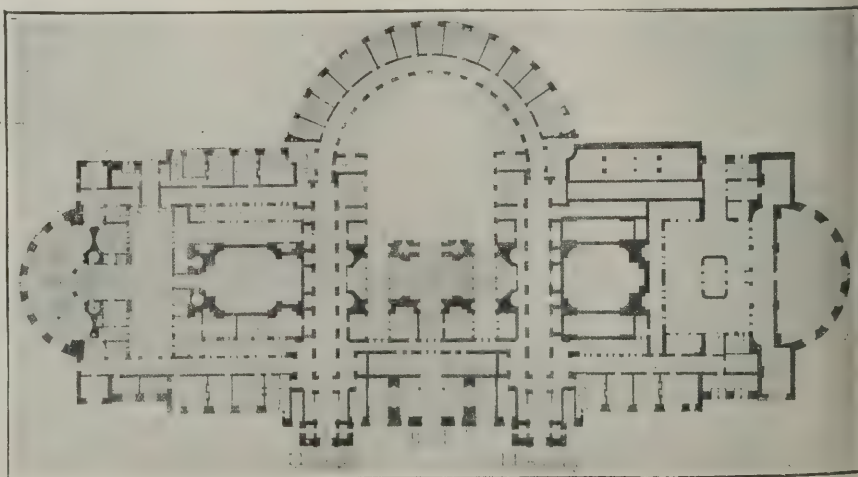
THE GARDEN CITY MOVEMENT.

The Garden Cities and Town-Planning Association, in order to cope with their increasing work, have taken larger premises at 3, Gray's Inn Place, W.C. The premises are upon the ground floor, and provision exists for the holding of classes and meetings. A programme of classes has been arranged in order to give practical instruction in "What Town Planning Means," and in order to equip a number of lecturers for popularising the movement. It is proposed to deal with the legal, sociological, architectural, engineering, municipal, financial, and scientific aspects of the question, while the point of view of the private owner of land will be specially dealt with. Particulars of the classes may be obtained from the Secretary. The annual meetings of the asso-

ciation will be held at Carpenters' Hall, London Wall, E.C., on Monday, February 5th, when the Hon. Mr. Justice Nevill will be in the chair; Mr. Cecil Harcourt, M.P., will speak on the progress of the movement, and Professor S. I. Adshead, F.R.I.B.A., will give an address on the beautifying of London.

Letchworth Garden City's Financial Success.

The Letchworth Garden City, which has been in existence for eight years, shows, by its latest report, a net profit of £174 14s. The growth of the town is shown by the fact that last November there were 1,515 houses, shops, and buildings, and, in addition, 49 factories and workshops. Those, with the addition of 115 houses, schools, etc., on the estate when purchased, made a total of 1,630 permanent buildings. Apart from the introduction of new industries, the enlargement of existing factories has become an important element in the growth of the town. The health of the town is excellent, and the death-rate is believed to be the lowest in England; it is stated to be 6.3, against 13.4 for the whole country. The infantile mortality rate is 54.54, compared with 106 for the whole country. Although it will not be possible to declare a dividend for two or three years, the directors hold the opinion that the Garden City idea has definitely proved itself economically and financially sound. This experience is very gratifying, not merely with regard to Letchworth, but as an augury for the general movement.



PROPOSED NEW PARLIAMENT BUILDINGS, WELLINGTON, N.Z. PRINCIPAL FLOOR PLAN OF THIRD-PREMIATED DESIGN.

NEWS ITEMS.

A Town Plan for Portsmouth.

At last week's meeting of the special town-planning committee of the Portsmouth Corporation the borough engineer was instructed to prepare a preliminary "town plan." It is understood, however, that the scheme at this stage will not go beyond the outlining of roads, etc., and be marking out of sites for public buildings.

Stevens's Wellington Monument.

Mr. John Tweed's bronze equestrian statue of the Duke of Wellington, which has been remodelled from the original design by Alfred Stevens, was placed in position at the summit of the Wellington Monument in St. Paul's Cathedral on Thursday last, January 18th, and is to be unveiled on January 25th, the date of the Feast of the Conversion of St. Paul.

Change of Address.

Messrs. Pepler and Allen (Mr. George L. Pepler, F.S.I., and Mr. Ernest G. Allen, A.R.I.B.A.), architects, surveyors, consulting land agents and valuers, announce that they have moved to Howard House, Arundel Street, Strand, W.C. The telephone number (Central 637) and telegraphic address (Rusinurbe, London) will not be changed.

Books on Architecture and Building Construction.

Messrs. W. and G. Foyle, of 135, Charing Cross Road, W.C., send us their latest catalogue of technical and scientific books. The list is a very comprehensive one, and includes a large number of books on architecture, building construction, and kindred subjects. The prices quoted are for new copies and the latest editions, but nearly all the books can be obtained second-hand at about half the published price.

Winnipeg Legislative Building Competition.

Mr. Ian MacAlister, Secretary of the R.I.B.A., informs us, in a letter dated January 18th, that he had then just received from the Minister of Public Works, Manitoba, the following cablegram in reference to the above competition: "Date for acceptance of plans extended to March 31st." Notification to similar effect has also been sent to us by the High Commissioner for Canada.

Proposed New Bridge at Twickenham.

The subject of a new bridge over the Thames at Twickenham has occupied the attention of a committee of the Twickenham District Council for some months, and a short time ago the council received the committee's recommendation to concur in the opinion that a footbridge should be constructed, and that the Surrey and Middlesex County Councils, the Ham District Council, the Dysart Trustees, and the owners of land on Eel Pie Island should be approached with a view to their contributing towards the expense of construction, estimated at £6,000. The recommendation was referred to the Town Planning Committee of the council.

Magdalen College Tower to be Restored.
After the Tom Tower, Oxford, it is the plan of Magdalen Tower to submit to the

restorer. Twenty years ago a good deal of work was done in restoring the carving and tracery, but further restoration is now necessary, and in the course of this year the work will be undertaken.

Rochdale Infirmary Extension.

The awards in this competition are as follows: 1st, Mr. Hugh Healey, A.R.I.B.A. (Jesse Horsfall and Healey); 2nd, Messrs. Sykes and Evans; 3rd, Messrs. Butterworth and Duncan—all of Rochdale, the competition being limited to local architects. The premiums were 50, 30, and 20 guineas respectively. Eleven designs were submitted.

Halifax Town-Planning Competition.

Professor Adshead has made the following awards in this competition: 1st, Messrs. Longbottom and Culpan; 2nd, Messrs. Medley Hall and Son; 3rd, Messrs. C. F. L. Horsfall and Son—all of Halifax, the competition being a local one. The premiums were 100, 30, and 20 guineas respectively. Eight designs submitted, which will be exhibited shortly at the Town Hall, Halifax.

Caerleon College.

A new training college for teachers is to be erected at Caerleon, near Newport, Mon., from designs by Messrs. Alfred Swash, F.R.I.B.A., and Son, architects, of Newport. The contract has been secured by Mr. F. Bond, of Cardiff, at £26,000, exclusive of the cost of site, furniture, and fittings. The college will be for the training of male teachers, the female teachers going to the new establishment at Barry.

The Villa d'Este as an Academy of Art.

The announcement of the "Tribuna" that the Archduke Francis Ferdinand has presented the Villa d'Este at Tivoli to the Austrian State in order that it may be transformed into an Austrian Academy of Art, similar to the French Academy in the Villa Medici on the Pincio, is not, the Vienna correspondent of the "Times" reports, expressly confirmed, but is probable. It is no secret that the Archduke Francis Ferdinand, who inherited the Villa d'Este as the heir of the last Duke of Modena, regards it as a white elephant, of which the upkeep is estimated to cost as much as £4,000 a year. The question of selling the villa has repeatedly been discussed, but a sale is said to have been discountenanced in the highest quarters.

Carpenters' Company's Prizes.

The Worshipful Company of Carpenters offer prizes to "Craftsmen, or those engaged in the actual work or carpentry, joinery, or the other arts connected with building," who must have attended at least five lectures of the series on the arts connected with building that are now being delivered at Carpenters' Hall, for the following designs:—(1) Row of six labourers' cottages, cost not to exceed £1,000; (2) Village workmen's institute, cost not to exceed £350; (3) design for any piece of domestic furniture in any material. For (1) and (2), the prizes are £5 5s. and £2 2s.; for (3) £3 3s. and £1 1s. The first lecture of the series is to be delivered to-night, at 7.45 p.m., by Mr. Thackeray Turner, F.S.A., whose subject is "The Unity and Difference in Art and Craft."

NATIONAL FEDERATION OF BUILDING
TRADES EMPLOYERS.*Midland Centre Annual Meeting.*

The annual meeting of members of the Midland Centre of the National Federation of Building Trades Employers was held at the Imperial Hotel, Birmingham, on Thursday, 11th January. The President (Councillor J. Hardy Walker, of Derby) was in the chair, and there were 35 members present. The following officers were appointed for this year: President, Mr. J. B. Whitehouse (Birmingham); vice-presidents, Messrs. W. Yates (Leicester) and G. Gough (Wolverhampton); treasurer, Mr. H. Willcock (Wolverhampton); auditors, Messrs. R. Webb (Birmingham) and A. Brazier (Bromsgrove.) Representatives to the National Council, National and Midland Conciliation Boards, etc., were also appointed.

The annual report stated that during the past year the labour unrest necessitated somewhat frequent meetings of the various Conciliation Boards. Perhaps the most serious difficulty during the year was with the Builders' Labourers at Nottingham, who were on strike for two months in the early summer, and were sympathetically supported by other branches of the trade. Five meetings of the Midland Centre Conciliation Board were held, with results that have been already recorded.

The membership of most of the affiliated Associations was well maintained, Birmingham reporting an increase of 26, and Nottingham of 10. The first Midland Centre Year Book and Directory was issued in March last, and the committee had been much encouraged by the appreciative reception accorded to it. A scheme for the insurance of members against Workmen's Compensation risks had been adopted. The most important matter, perhaps, that had been before the Federation during the year was the National Insurance Bill. Whilst generally approving the principle of a National scheme of insurance, the members came to the conclusion that the measure before Parliament required careful consideration, and the efforts of the National Federation, the Centre, and the local associations, were consequently directed towards securing amendments and urging the necessity for delay before the Bill became law.

[Although the desired delay has not been granted, efforts to get the Act amended will doubtless not be relaxed, and its effects on the building industry should be carefully watched and recorded.]

The report was approved and adopted. It was decided to hold the usual Conference of Midland Centre secretaries in March. The question of National Federation finance was considered, and the proposed alterations of rules were generally approved. The Emergency Committee were instructed to consider the question of Midland Centre Finance in February. The statement of accounts showed a small balance on the right side. The Emergency, Collective Insurance, and Year-book Committees were appointed. It was decided to call the attention of the National Federation to the action of the National Conciliation Board in sending out circular letters in reference to the importation of work. The President was requested to convey to the National Federation a hearty invitation to hold their next summer meeting in Nottingham. —Condensed from a report received from FRED. W. AMPHLET, Secretary.

ILLUMINATION AS A STUDY FOR ARCHITECTS.*

By JOHN DARCH, F.S.I.

IN submitting this paper to the Society of Architects, the author's object was to draw attention to the present objectionable methods of artificial lighting, to point out a more reasonable and acceptable way, to define the position of the architect as against that of the engineer in this matter, and to touch briefly upon some of the points necessary to a proper understanding of the subject.

The Position of the Architect.

If the examples of lighting that may be seen everywhere have any power of demonstration, it must be conceded that the average architect is not greatly impressed with the importance of good illumination. It is seldom preconceived, and is largely left to the empirical methods of the electrical engineer or gasfitter.

The art of illumination is correlated to architecture and decoration; it is a thing apart from engineering, and independent of the nature of the illuminant, while its rules apply with impartiality to electricity, gas, acetylene, or oil lamps; it is, in fine, a study for the architect. The architect may, of course, employ a specialist; but, even then, he should know enough to judge the work of such a person.

Having dealt at some length with the governing factors of illumination, which were classed under the following heads: (1) physical; (2) physiological; (3) æsthetic; and (4) economic, the author proceeded to consider

General Principles.

The whole case for good lighting is embodied in a very simple axiom—namely, the purpose of artificial lighting is to make readily and properly visible the things required to be seen.

This may be made more definitive by the following rules:—

(1) The lamps or other sources of light to be so disposed that they do not occupy the field of vision; (2) the illumination to be sufficient to cause the objects to appeal at once and with comfort to the eye; (3) for general illumination the light to be well diffused, with a preponderating downward direction, freely flooding ceilings and walls; (4) local lighting to such as desks, benches, exhibits, etc., to be specially suitable and in most cases adjustable in position and power; (5) the colour to be as pure and white as possible. Monochromatic light, as a rule, to be avoided.

A false light makes a false impression, and an interior, no less than a face, can only be its own self when naturally presented. It requires nothing more than common sense, and a consideration of the natural demands of any object to be illuminated, in order to produce truthful and agreeable results.

General v. Local Lighting.

The relative merits of general and local lighting have been the subject of much discussion. Thus, a bank may have a general illumination sufficient for desks and all purposes, or the desks may be locally illuminated with desk lamps from which a small amount of light may escape into the gloom overhead; or, again, there can be a combination of both. Daylight has been quoted as an exemplar in favour of general lighting only, but when it becomes practicable to provide artificial

light equal in quality and abundance to that of freely admitted daylight, nothing could be said against it. It is a question of sufficiency of light, and of what has to be illuminated; each case needing special consideration. In the average public hall general lighting only would be the best, because the illumination at the working level, which would usually be sufficient at 1 ft.-candle, could easily be obtained, and because it is desirable to exhibit the decorative features. A school or reading room would be a different matter, for 3 ft. to 5 ft.-candles would be necessary, and to get this in general lighting may mean a fatiguing blaze of light, and a large expenditure, while any varying local needs could not be met. There are cases where all needs are best met by local lighting only, but the most economical and satisfactory results are usually obtained by a small measure of general lighting combined with an adequate and well-shaded local lighting.

General illumination may be broadly considered as of two kinds, direct and indirect, but there may be modifications and combinations of both.

Direct lighting is that in which the light radiates immediately from the source to the objects to be viewed. Where glass shades are used it would still be considered direct lighting. This method is usually economical and convenient, but it should be used only where it can be made to accord with the foregoing rules, as for example:—(a) Ceiling lights in lofty rooms, where the eyebrows, which are designed to screen the eyes from the sky, will serve the same purposes at night, and in such cases no lights should subtend an angle greater than 30° from above the eye; (b) direct lighting would also be used in places that are normally viewed in one direction, as shop fronts, churches, public halls, picture galleries, etc., in which the lamps may be recessed or screened; (c) under any circumstances where the lights do not come before the eyes.

The author then considered the art of shading, condemning many forms of shade commonly in use, and suggesting better forms for the effective protection of the eyes.

Indirect Lighting

is that in which the illumination is obtained from surfaces illuminated by concealed lights. It usually presupposes a white ceiling and upper walls or other extensive diffusing surfaces—the larger the better. The results are great uniformity of lighting, approaching practical daylight more nearly than with any other system, while admitting of greater distinction of vision and affording comfort to the eye.

It has been objected to this form of lighting: (1) that it has a cold and cheerless effect; (2) that there is a flatness and an unpleasant absence of shadow; and (3) that light is wasted by absorption.

With regard to the first, if by "cold" is meant whiteness of light it is a point gained; nothing but prejudice could prefer coloured light; the ruddy glow of evening may be very beautiful, but we should not like to have it all day.

As to the second, that it is flat and shadowless, it is really not true. Indirect lighting does no more than to relieve the blackness of shadows, just as daylight does, while it puts a soft gradation on

reliefs, as was seen in the photograph exhibited by the author.

With regard to the last, it is a fact that of the total flux of light, a considerable percentage is absorbed, but it is also a fact that more light enters the eye than by a higher intensity of direct illumination and, as stated, vision is much easier.

The means that may be employed are arc lamps—providing they are of the right kind—tungsten glow lamps or incandescent gas in inverted bowls or reflectors on pendants or brackets, or lights may be hidden behind cornices, screens, or in many other forms. Where there is not a suitable ceiling, downward reflectors will be required, but to maintain the principle they must be large and with a diffusing surface. It is absurd to put them under a good ceiling as is often done.

[This subject was then illustrated by eighteen lantern slides from some remarkable photographs taken at night by Mr. Thos. Ritchie, showing the interiors of the Natural History Museum, art class rooms, gymnasium, drawing offices, bake house, cabinet making and dressmaking factories, London newspaper machine room, jewellers', dress, and other show rooms, and also a church, all amply illuminated—from 4 to 10 ft.-candles—and yet with soft and daylight effect. Indirect lighting from ceiling gave the best results, in other cases 36 in. over reflectors were used. Good illumination was obtained from "semi-indirect" lamps, but they are objectionable on low ceilings.]

The author next dealt with photometry and illuminometry, standard units and nomenclature, lamps and pole curves, and then proceeded to consider

Decoration, Wall Paper, and Reflection

Effective lighting depends upon two factors; (1) the illumination as expressed in foot-candles or lumens—i.e., the light falling on a surface, irrespective of the nature of that surface; and (2) the light absorbing power of the surrounding surfaces.

When an architect decides upon dark oak panelling or deep red wall paper, does he fully realise the extent of its effect upon the lighting, or would he put much as three times the illumination in such a room that in a room with light decoration? Where is the wall paper that has printed on the back of it:—

avg. coeff. refl. 0.42

or whatever the coefficient of reflection may be?

The factor of reflection is of more importance in the illumination of a room than is generally realised; indeed, without some reflection, illumination would be absolutely nullified; the lamp might shine, but darkness would reign. What we do see depends entirely upon the specific absorption of the surfaces before us, both as to luminosity and colour. One ft. candle on white paper would be more than 200 ft. candles on black velvet.

The following are a few coefficients of diffuse reflection selected from Dr. Loos's lists:—

White blotting paper	..	..	0.9
White cartridge	..	..	0.8
Light yellow paper	..	..	0.7
Plain clean deal	..	..	0.6
Yellow painted wall—clean	..	..	0.5
dirty	..	..	0.4
Pale pink paper	..	..	0.3
Vermilion or blue green	..	..	0.2
Deep chocolate	..	..	0.1
French ultramarine	..	..	0.05
Black velvet	..	..	0.0

*Extract from a paper read before the Society of Architects on January 11th.

The rule for finding the total illumination due to the lamp plus the reiterated reflections, in the simplest case of an enclosed room, is:—

Total illumination = $I(1 + k + k_2 + k_3 \dots k_n)$
where k is the coefficient of reflection and I the initial illumination; k being less than unity, the above may be thus stated:—

$$\Sigma I = \frac{I}{1-k}$$

from which it may be seen that if a room lightly decorated has a coefficient of reflection of 0.7, the total flux of light on any surface would be $3\frac{1}{3}$ times that of the initial illumination. If, however, we take a case of dark walls, etc., say, k 0.15, the total would be only 1.17—no increase worth speaking of. In practice, secondary illumination adds from 25 per cent. to 100 per cent. of that from the lamps.

Of no less importance is the physiological aspect of contrasts against dark backgrounds, to which reference has been already made.

The author by no means advocated white interiors. Uniformly white interiors are fatiguing to the eye if not to the mind; if white is used, it should be varied just as soft shadows vary relief surfaces. If a darkly decorated room requires more light to lighten it, such depth of colour serves no better purpose than to eat up costly light. According to Fechner's law of sensation, contrasts in light and shade are relative and not absolute, and the relation being fixed we are unable to judge of absolute intensity; so that any scheme of decoration on a somewhat lighter scale may equally meet the artistic sense and afford considerable advantage in illuminating value.

The eye needs relief and rest, and the lower part of a room, where the value of reflection is small and where the eye more naturally falls, is the best place for darker areas. Hence, floors should be dark, and dadoes are desirable, but not in too strong contrast to the upper walls.

Practical Application.

This paper will be concluded with a few notes on the practical application of the foregoing to churches, schools, hospitals, public libraries, and factories—chosen to afford as large a variety of treatment as space will allow. The important subject of domestic illumination was too large to be included in this paper.

Churches.

The simple-minded person would suppose that the beautiful decorations of many churches are placed there to be seen; but go into the first church you may meet, during full evening service, and you will probably find that the upper two-thirds will be lost in a gloom that is heavy and depressing, while the lower third will be largely obscured by dazzling points of light, and the chancel scarcely visible; every face will have a hard patchy appearance due to want of diffusion, and the preacher is at all interesting two vexatious pulpit lights will send you home with smarting eyes.

It is not a question of brilliant lighting *versus* the mystic gloom, which some architects have advocated as conducive to worship. The "dim religious light" of a morning service may have its charms, being usually relieved by softly illuminated surfaces that can be seen with comfort; but the obscurity of an evening service, pierced by obtrusively brilliant points that dominate everything and refuse a haven of rest to the baffled eyes, is not likely to be helpful to worship—excepting by way of penance.

This is but one point of consideration amongst many to be found in church lighting.

Treatment will depend upon the style of architecture and many contingencies. Sufficient light for practical purposes is the first consideration— $1\frac{1}{2}$ ft.-candle at the pew level; the next is eye comfort, and another is to make the building and its decorations easily and agreeably visible—a quiet general light is all that is required. Chancels are effectively illuminated by lights behind the chancel arch or other projections; the Guards' Chapel in St. James's Park is so treated, and has a sublime effect. The pulpit and reading desk require 4 ft.-candles, Notices and inscriptions should be illuminated. Avoid what has been already described as decorative lighting.

Schools.

The author had examined a number of modern elementary schools, and generally speaking had found the artificial lighting to be (a) insufficient; (b) too uneven, having usually but four gas or six electric glow lamps to a class of 40 children, and these too near the centre of the room; (c) in the class-rooms unprotected lights in nearly every case in the direct range of vision of both scholars and teachers; and (d) the blackboard, which needed more, really had less light than elsewhere, to say nothing of the gloss.

Dealing with the class-room only, there are three methods of lighting, either of which may be made satisfactory.

(a) Indirect illumination by high-power lamps illuminating a white ceiling and frieze.

(b) Direct lighting from ceiling lights pendent about 2 ft. to get diffused light from ceiling and not placed centrally, but nearer the left-hand window.

(c) If pendants, reaching to 6 ft. or 7 ft. from floor, are continued to be used, there should be eight or ten of them, where there are now four or six, and each should have opaque shades in which the light can be entirely recessed. A form shown by the author would, he explained, serve also for general illumination, for where it is adopted the ceiling and walls are fully illuminated; the eyes will be protected and the greater intensity concentrated on the desks, where it should be a minimum of 3-ft. candles. For pencil drawing and needlework, special desks or tables should have an illumination of 8 ft.-candles.

The wall at the teachers' end is the exhibition screen, and should be specially lighted with screened lamps giving an illumination of 5 or 6 ft.-candles.

Hospitals.

It had been the author's privilege to inspect many of the principal London hospitals with special respect to their lighting arrangements, and where everything else is so very admirable the artificial lighting reminded me of Miss Nightingale's trenchant observation, that "the very first requirement in a hospital is that it should do the sick no harm." There is, obviously, a universal want of discrimination in the modes of lighting, the fittings were generally found to be inappropriate, and the "shades" afforded no relief to the stinging points of light that were exposed to the eyes of the sensitive patient and that to the lower and weaker part of the eye.

Briefly, the ward unit, of, say, twenty beds, should be provided with a general illumination of about 0.5 ft.-candles, with protected or indirect illumination.

The sisters' and nurses' tables should have lamps adjustable—without dusty cords—to from 3 to 8 ft.-candles, the latter for dark needlework, with dark shades that will entirely recess the lamp—preferably dark green opal. The patients' lights are too often conspicuous by their absence, the nearest light, usually a single glow or gas lamp, being 12 or 14 ft. distant; there should be a screened light at the head of each bed, placed low behind and on one side of the head, giving an illumination of 3 ft. candles, and adapted for use for medical examination.

The dispensary is usually the worst served; dispensers have complained of the worry of reading the prescriptions in the inadequate light, while many bottles stand in semi-gloom. A shaded light, giving 4 or 5 ft.-candles, is required to each man; the shelves should be illuminated with screened lights, while special facilities are desirable for reading the graduated measuring glasses.

The operating theatre calls for special consideration, for there is a large amount of surgical work done after dark. Here, again, there is no established form of lighting; each hospital having its own arrangement, not all satisfactory. The essentials to success may be thus summarised: (a) White ceilings and walls, pale grey or green dado and darker floor; (b) separate general illumination with screened lamps over the sinks and sterilisers; (c) the lights to the operating table should not be clustered together as they commonly are—forming black shadows—nor be placed directly over the table, whereby the surgeon's work is obscured by his own head and hands; (d) lamps must not radiate heat on the patient or on the surgeon's head; and (e) all septic risks must be avoided; therefore, there must be no dust creating cords and pulleys or fittings, and glass must be smooth and easily cleaned. Well-made arc lamps may be used, either (a) direct-lighting, white flame arcs placed over a diffusing ceiling light, or where there is no skylight, indirect lighting—both affording a splendid light. There is an excellent scheme in practice in Germany, wherein isolated beams of light are concentrated on the table from a projector lamp outside the room, whereby dust, heat, and the intrusion of workmen are quite precluded.

Libraries.

There is, perhaps, no greater tax on nervous energy than continuous reading of educational literature; it is important, therefore, that the further burden of eye strain should not be imposed on the reader by misplaced and inadequate lighting. Better the plainest building where the books can be read in comfort than a marble mausoleum of literature that chills enthusiasm and worries the eyes of the student. I have seen many handsome libraries, but not one properly illuminated.

The ordinary library requires a small measure of well-diffused general lighting—0.5 to 0.75 ft.-candles. The principal feature, however, is the local lighting, which should consist of (1) a separate light to each reader—on his left—with an opaque or semi-opaque shade; (2) every desk lamp should be adjustable so as to permit of a modification of from 2 to 10 ft.-candles, and under the reader's control—anxious librarians may have them made "fool-proof"; and (3) the reader should be expected to switch on and off his own light, which would effect a great saving.

The news stands are always well patronised. A good light is wanted for them, as newspapers are not so easy to read as a clearly printed book. The author showed an illustration of waste and bad lighting, in which a lamp doing duty over a double desk gave but an illumination of 0.32 ft.-candles, a pitiable result from a 30 candle-power lamp, apart from the shadow nuisance of the puckered paper. In contrast to this there is in Cripplegate Library a stand with pairs of bracket lamps of 8 candle-power each so placed that it gives $3\frac{1}{2}$ ft.-candles on the page—ten times the illumination, with half the expenditure of light, and no shadows. These are not, however, all that they should be, for whichever way you look the glowing filaments hit you. This could be easily obviated by the use of deep and dark shades directed towards the desks.

Where will you find book racks so illuminated that the titles can be deciphered without practically having to dab one's nose on the books? Where is the glazed indicator in the lending department that can be read without being bothered with gloss? Do architects ever think of the irritation caused by the upward reflection from polished table-tops?

Factories and Workshops.

Holland is the only country that has framed an Act that properly stipulates the amount of light to be provided, and where such as embroiderers, jewellers, and draughtsmen are required to have a minimum of 15 bougie metres (about $1\frac{1}{2}$ ft.-candles), and all others 10 bougie metres. British legislation is confined to enamelling shops and underground bakehouses, which are, respectively, to be "efficiently" and "adequately" lighted, expressions which mean nothing in particular, and therefore useless. Definite legislation is urgently necessary, for there is still an overwhelming majority of workers under conditions that are ruinous to eyesight and health.

In machine shops the majority of accidents are said to occur after 4 p.m., and no wonder, for brilliant points of light against a dark background must baffle the eyes and deceive as to distances. What is wanted is a well-diffused general light, aided by whitened and illumined ceilings and walls. Nothing is better for this purpose than indirect lighting. Screened local lighting should then be added to all points requiring the attention of operatives and to benches, desks, etc. Money spent in a liberal lighting of factories and workshops is repaid a hundred-fold in better and more work.

DISCUSSION.

Mr. H. Freyberg, F.S.I. (London), in proposing a vote of thanks to the lecturer, said he thought it would be impracticable to have a light for each reader in a library open to everybody, and to trust to the readers to switch the lights out when finished with. He agreed with the lecturer that the illumination of schools had been shamefully neglected. He remembered his own schooldays, and how badly the form rooms were lit. It was nothing less than their duty to see that the sight of the rising generation was preserved by carrying out proper methods of illumination.

Mr. B. R. Tucker, M.R.San.I. (Past Hon. Treasurer), in seconding the vote of thanks, said that one of the chief points which architects had to take into consideration was the question of cost. They were limited to a certain expenditure by

their clients, and that limit left very little to be devoted to any special scheme of lighting. Light in its travels diminished in an inverse ratio to the square of the distance, and they could not afford the amount of light necessary for lighting a room by reflection from the ceiling, owing to the great amount of light lost. It might do for public buildings, but for private habitations it was out of the question.

Mr. Justus Eck said, as an electrical engineer, he was one of those people whom Mr. Darch had aimed a shaft at, and it would be a pity to take to heart too seriously all that the lecturer had said regarding the bias of experts. It was to be regretted that Mr. Darch had not referred to daylight illumination. From what was seen around them, it would appear as though architects in the past were not quite certain whether a window was a ventilator or a lighting device; but the study of papers like the lecturer's would no doubt improve the illumination of buildings both from the daylight and the artificial lighting point of view. The importance of artificial lighting being as similar as possible to daylight had not been sufficiently impressed. Beautifully decorated buildings were seen to great advantage by daylight, and it was important that the effect produced on the eye should not be destroyed or minimised by artificial light. His experience, when approaching architects with a view to the use of arc lamps, was that they invariably declined to consider their use owing to their appearance, although he saw no reason why arc lamps should not be made an artistic feature.

Mr. H. Mackinnery said that architects could have every confidence in the illuminating engineer, even if they were experts in one particular direction. He himself was interested in one form of lighting—the application of tungsten and metal filament lamps—but he had on more than one occasion recommended the use of other lamps. They, as illuminating engineers, endeavoured to forward the industry, and not personal interests. There was a difference between the actual effect of daylight and illumination by artificial light. In daylight the surroundings were very bright, and exercised a controlling influence on the aperture of the pupil of the eye, whereas to illuminate a room artificially with many foot-candles would mean the use of a concentrated light producing very dark surroundings.

Mr. J. S. Dow felt that there must be many instances where an architect required a certain arrangement of lights on account of the architectural features of a building, and such arrangement would be governed by quite different factors from those which illuminating engineers usually employed. He hoped that on some future occasion a paper by an architect would be read before their society on this subject.

Mr. Darch, in reply, said that the architect was the man who held the key to the situation. If he would only turn his attention seriously to questions of lighting, he could do more for them than any other person. They would do more good by spreading the gospel of illumination among architects. Mr. Freyberg had suggested that readers could not be trusted to turn out the lights, but he (the speaker) thought they could. Many large public libraries at the present time were fully lit for one or two readers, and he thought that was a greater waste than if one or two were left on by readers

under the system he proposed. Mr. Tucker had said that indirect lighting could not be adopted in many cases owing to its cost, but he was of opinion that, light for light and effect for effect, it could be installed at an equal cost with direct lighting. It was not the fact that light lost by reflection within a room. There were of course slight variations, but inside a sphere it had been proved that light was not lost whatever the size of the sphere. He had also said very definitely that daylight should be the guide to artificial lighting.

THE LONDON LABOUR MOVEMENT

The notice given by the London district of the Amalgamated Society of Carpenters and Joiners of demands for increased wages and shorter summer hours was considered at a meeting of the masters last Thursday, January 18th, but no decision was reached. It is expected that the two sides will meet in a conference, but as the men's notices do not take effect till June 8th the negotiations will probably go on for some time before a definite answer is given.

The demands, as has been already stated, are for an increase of wages from 10½d. an hour to 1s., double pay for overtime, and a reduction of summer hours from 50 to 47 a week. These are considered by the masters to be exorbitant. Their view is that the brighter prospects which the building trade is beginning to enjoy after a period of stagnation lasting for five or six years would be checked by such a considerable increase in working expenses. The prosperity of the trade is dependent to a great extent on the enterprise work on speculative lines in the suburbs, which is largely undertaken on borrowed capital. The proportion of failures in the trade in the last few years has been high, and it is pointed out that any such substantial rise of wages as would threaten the stability of speculative builders would tend to discourage the flow of capital to the industry. The employers complain also of being hardly hit by recent legislation, in particular by the Insurance Act and the Workmen's Compensation Act. In addition to the contributions for invalidity insurance, they anticipate a heavy burden in connection with the unemployment provisions, the building trade being one of the three groups of trades to which this part of the Act applies. Complaint is also made of the uncertainty as well as the weight of the liabilities imposed on builders by recent Finance Acts.

Proposed New London Exhibition Building

It is stated that arrangements are being made for the formation, on an extensive site near Buckingham Palace of a huge exhibition of the type of Olympia. The details, however, are not yet available.

JANUARY 29. ADDITION TO CENTRAL POLICE AND FIRE STATION, SWANSEA.—The Corporation of Swansea invite design for additions to this building, including the provision of a new police-court. The successful architect will be appointed to carry out the work. Names to be sent to Mr. A. D. Jenkins, Borough Estate Agent, 3, Prospect Place, Swansea, before January 29th.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 31st, 1912.

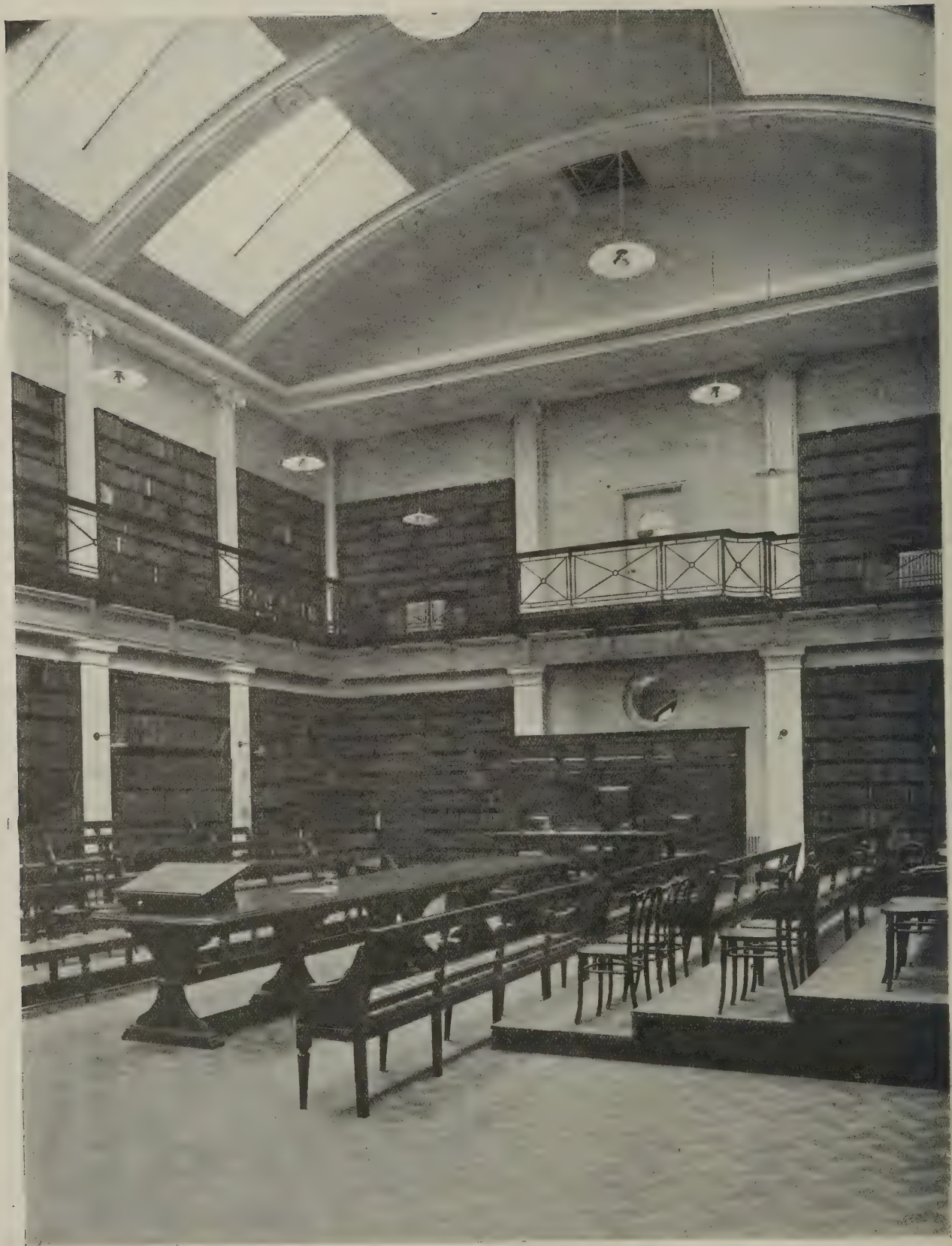
Volume XXXV.

No. 889



TOWN PLANNING IN GERMANY:

THE BISMARCKSTRASSE AND BERLINERSTRASSE, CHARLOTTENBURG.



HALL AND LIBRARY IN NEW BUILDING FOR THE ZOOLOGICAL SOCIETY, REGENT'S PARK, LONDON.

JOHN BELCHER, R.A., AND J. J. JOASS, F.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

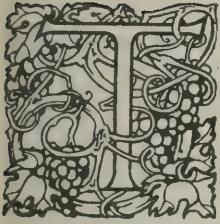
JANUARY 31st, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 889.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Architecture and Painting.

HE two papers read at the last meeting of the Institute of Architects, under the heading "Colour as Applied to Architecture," did not cover exactly the ground which one would have expected from the title. They dealt really with the question of the relation of the art of painting to the art of architecture, a very important

and very interesting subject. But before we come to that, which is the union of two arts, there is the subject to be considered of the part which colour may play, purely as colour, in heightening and assisting the effect of purely architectural detail. This part of the subject seems to have rather dropped out of notice, except in a sentence or two in Mr. Edgar Wood's paper; but it is the most distinctly architectural phase of the subject, and should have been considered first.

There has always been a difficulty in settling the relative claims of contour (or profile) and colour in reference to architectural detail. The subject divides itself into the two problems of the treatment of modelled surfaces or mouldings, and of flat surfaces. Mouldings produce their effect by gradations of light and shadow. The application of colour to the different mouldings of, say, a Gothic arch, has the result of weakening the effect produced by gradations of light in delicately profiled mouldings; the arch-moulding becomes a series of bands of colour, which impress the eye more strongly than the light-and-shade effect produced by the profiles of the mouldings; and in those styles of oriental architecture which employ colour largely we generally find that there are few mouldings, and those often of rather poor profiles. In the highly coloured styles of architecture, it seems to have been felt that colour was enough, and modelled surfaces were of less consequence, and in fact, interfered with the colour effect. Apparently one cannot have both effects, modelling and colour; one interferes with the other. The reason for this is suggested in Mr. Wood's remark that colour is emotional, while form is a matter of intellectual perception; and "in the East the emotional instinct proved too strong, and everything is sacrificed and surrendered in order that colour may become the all-powerful appeal." It is a question of sunlight to a great extent. Strong sunlight brings out colour effect with great brilliancy, and even seems to create the desire for it; and architecture becomes rather emotional than rational. The Renaissance in Italy was purely a rational movement, and, as the writer of a good article in the "Times" observed, the great Renaissance architects "designed entirely in plainness."

Architectural materials which have strong inherent colour, such as polished marbles, are adverse to the effects of moulding; the lights and shadows of the moulding do not come out. What we seem to need in constructional polychromy is the massing of colour by the opposition of broad expanses of material which contrast, but harmonise in colour. Much more might be done with this, and the effect much broader and more reposeful than the insertion, for instance, of marble and granite columns in a façade mainly of neutral-tinted stone. These, like the Purbeck marble

shafts in some of our cathedrals, disturb the unity of the architectural design, and are rather a commonplace source of effect.

In buildings in which the main lines are accentuated by moulding, the employment of bright and decisive colour is better left to the flat interspaces of the design. Externally, such a material as mosaic supplies this; internally, it has never been done so well as by stained glass; and it is important to remember that, as far as regards stained glass, the subject—in other words, the story portrayed—is of less importance to the general effect than the colour, and the pattern which it makes. Pictures of events in stained glass are seldom (we might almost say never) successful; it is demanding too much of the material. Stained-glass design should symbolise rather than illustrate a subject. And its colour is its most important element. In stained glass we have a source of colour-effect which, rightly treated, has something architectural in style about it, and takes its place as a decorative portion of the architecture; and it is hardly effective apart from an architectural framework. It is not, properly speaking, a pictorial art, and that is why it blends so well with architecture.

When we come to mural painting, and to painting generally, we then have to consider an art which is much more than architectural decoration. That was the real subject of the two papers at the Institute; and it means not architectural decoration in the ordinary sense, but the harmonious combination of two arts. In Sir Alfred East's paper there are some important points to be noted. In the completion of any public building, he thinks, the architects should be absolutely responsible; that is, that if it is to be decorated with mural paintings, the architect and the painter should be, as it were, in collaboration from the first; each should have some general knowledge of the art of the other. The result would be, that the architect would know beforehand what subject the painter was to treat, and what space he would require; and would arrange that space so as to have a good lighting for the picture; the pictures and the building would be planned together and make one whole. That is a counsel of perfection, and we doubt if it has ever been realised in this country. Generally speaking, some spaces on a wall are found suitable for mural painting, or have been left for that purpose, and a painter is invited to paint on them subjects illustrating the history of the city, or something of that kind, which may prove not to be decorative at all in the sense that the architect would like. The moral is that the intended mural decorations of a public building should be settled in advance, the painter appointed in advance, and the architect and painter work together from the first.

"But," says Sir Alfred East, "what shall I say to the architect who designs a private house and leaves no space for sculpture or painting?" That is an old complaint revived. A good many years ago, the late Mr. John Brett declared that there were hardly any houses in London where a picture could be hung in a good light, and he induced the Council of the Royal Academy to offer their architectural prize of the year for a design for a town-house with rooms which would have a good light for pictures. Sir Alfred East evidently has much the same opinion; he thinks that one of the causes of the decline in the purchase of easel pictures is that neither the architect nor the commercial

decorator ever considers that it is possible for the cultured man to be interested in the arts of painting and sculpture. We should doubt that being the reason; the decline in the purchase of pictures is more likely to be because times are bad; a man who has plenty of money and who has a love of pictures will be likely to purchase one that he admires, without any consideration as to whether his house has a good position to hang it in; he will get it in somehow. But we fear it is too true that an architect, in designing a house, does not sufficiently consider whether the client has pictures or sculpture for which he wants a good position. It is certainly a point to be considered. Perhaps, on the other hand, it may be said that the client ought to inform the architect what pictures and sculpture he wants provision for, and not leave it to chance. At all events, the suggestion is one to be borne in mind by architects who are making plans for a house, and probably it very seldom is.

In regard to the mural decorations of public buildings, it is pointed out by Sir Alfred East that the painter is often called upon to paint an historical incident, and he has then the difficult task of endeavouring to arrange his composition so that, while illustrating his subject, the contours and the qualities of colour may be such as to have a decorative effect; and to the contours of colour Sir Alfred East attaches much importance. That is one of the most original points in his paper. All form is expressed by either straight lines or curves; the bounding contour of a mass of colour must be either straight lines or curves; the result may be very different, in a mural painting, in regard to its harmony with the lines and style of the architecture. We may as well quote his remarks on this head, for the point is novel and important:—

"The question arises, naturally—what is the best form, the most suitable form, by which we may display a particular colour at its best? That is a difficult question to answer, and if it is a difficult one in a single instance, how much more difficult and complex does it become when there are several colours to be placed in conjunction! and, after solving this problem, as far as colour is concerned, we have then to consider if the conjunction of colour we have accepted is such a one that will conform to the special conditions of the building to be decorated. This is a difficulty, and one that may be presented to the painter with varying results, according to the conditions presented by each particular building. He has to consider the masses and details of such a building to be decorated; his decoration should be so sensitive that it should support not only the larger masses of the structure, but each detail by which the architect has himself embellished his structure. He must be as sensitive as the architect in sustaining the purpose of its being; he must not in any way destroy or warp such an object; he has no right to take away the knowledge that there is a surface on which his painting is superimposed, or remove by some optical illusion any structural quality of the building which is necessary for its support. All these things he has to consider, and, if he were a great decorator, he would consider these; but, if he be a victim of some local authority, who dictates to him what he shall do, or how he shall do it, then failure is certain."

As a subsidiary question, it is asked whether, if there be no historic incident to record, the painter would not serve the architect better by substituting decorative landscape in place of an incident painting. In France there is a great deal done in the way of decorative landscape—some which is rightly called so, some which is not; it is important to remember the distinction. A decorative landscape is one treated so far in a flat and conventional manner, that it becomes a suggestion of landscape rather than a realistic presentment, and therefore does not do away with the sense of the wall's being there. A landscape painting in the full and complete sense of the word cannot be painted as a decorative mural picture, because it does away with the wall, and substitutes a view into a distance. If this distinction is borne in mind, decorative landscape may be a very pleasing and successful means of bringing colour into interior architecture.

Mr. Wood seems to have adopted the idea that has been often promulgated of late, that pictures are nothing except in connection with a scheme of decoration, and that the easel picture is self-condemned as a mere portable work having no relation to the architecture. With this we cannot

agree. Painting has a life and a value of its own, quite independent of architecture. If an owner had a definite number of pictures and had a room designed with wall-panels adapted to their shapes and sizes, so as to enshrine them in an architectural framework, that would no doubt have a more decorative effect than hanging them separately, in an obviously temporary manner, on a wall. That has been done in the room at the Louvre, specially designed for a series of pictures by Rubens, with excellent effect. There are many difficulties in following out that kind of scheme in a private residence. There is the uncertainty in the fixity of tenure in a house in modern times; not like the days when houses were built with the intention that they were to remain the family mansion from generation to generation. Then, before a definite architectural framework can be made for a private owner's pictures, he must be satisfied that he has completed his collection and does not want to alter or add to it; and that can seldom be the case. The best thing is, perhaps, to design an architectural framework for the most important pictures, which are likely to be permanent, and leave the remainder to be hung in a removable manner on the wall. To those who say, like Mr. Wood, that this is an undecorative way of using pictures or of treating a room, the answer is that the best pictures have a value of their own, higher than any decoration; and the placing of a picture in a gilt frame (gold being the great separator and harmoniser in connection with colour) sufficiently divides it off from its surroundings to give it a separate life of its own. To condemn "easel pictures" because they cannot be made part of a scheme of mural decoration is absurd. Many of the finest pictures ever painted have been easel pictures; the art of painting at its highest is of more value than any mere decoration, and those who only regard pictures as part of a scheme of decoration show a very inadequate appreciation of the art of painting.

Westminster Abbey and the Monument Question.

THERE is room, perhaps, for some further comment on the subject of Westminster Abbey and its monuments, on which a correspondence has lately been going on in a leading daily paper; a correspondence provoked by an unguarded expression as to what was held to be the duty of "clearing away some of the rubbish which defaces the Abbey." We call it "unguarded," because the journalist who wrote that light-hearted sentence could hardly have been thinking very seriously of what such an opinion really implies.

How the Abbey first came to be regarded as the special place for the memory of an eminent man to be commemorated by a monument it is perhaps rather too late now to enquire; it is ancient history. The Abbey was regarded, one may suppose, as the national church, having a far greater antiquity than St. Paul's, besides having been for centuries the coronation church of our kings; and as man, eminent in his parish or neighbourhood, is given a monument in the parish church, so it was thought that man who had deserved well of the nation at large should have a monument in the national church. As long as there was plenty of space, the honour of a monument in the Abbey was granted pretty freely, especially to military and naval commanders who had more or less distinguished themselves; and monuments were erected to reputation far slighter than would be accepted for any such claim to-day. The majority of these monuments were erected at a time when architectural taste was entirely at variance with the form of architecture represented by the fabric itself, and some of the most bombastic and tasteless monuments commemorate reputations which have now shrunk to very small dimensions; one might say, indeed, that the size and scale of the monuments seems almost in inverse ratio to the scale of the reputations. Thus the Abbey has been crammed up, it may be fully admitted, with a medley of monuments quite out of keeping with the style of the church, and a good deal of the detail of the ancient walls has been defaced or cut into to make room for them.

We may cordially wish that this had been different; that the monuments had been better designed, and kept, in most instances, to a smaller scale; and that, if they could not be expected to be in the same style as the building, at a time when all the spirit of mediæval architecture had died out, they should at least have been arranged, as to size and position, in some symmetrical relation with the architecture. But to talk of removing them now is another matter entirely. The position is summed up neatly in Mr. A. C. Benson's phrase: "I do not for a moment say they were right to put them up, but I am quite certain that we should be wrong to take them away." The reasons for this conclusion are twofold. First, a monument erected in former times to the memory of any one who was honoured in his own day ought to be considered a sacred thing, not to be touched. If it is to be accepted as a principle that a monument erected in good faith as a memorial is to be liable to removal or demolition at any time when a future generation finds fault with its taste, there is no security for the permanence of any monument whatever. We do not know what a future generation may think of some monument which satisfies our taste to-day; and if we pull down the monuments erected by our forefathers, our descendants may logically conclude that they have an equal right to pull down ours. On such a principle there is no security for any monument whatever. The second reason, which is perhaps an even stronger one, is that the Westminster Abbey monuments form an exceedingly interesting chapter of history. They not only recall the memory of a good many actors in the past life of the nation, but they form an object lesson in the history of our national taste, or (as some may say) want of taste. Human history is even more interesting than the history of Gothic architecture, and the Abbey monuments form a chapter in it which we cannot afford to efface.

A minor reason for not disturbing them, which is mentioned by Sir W. Richmond, is that the removal of many of them would undoubtedly leave bare spaces where mediæval masonry or detail had been cut away or defaced; spaces which would have to be made up with modern Gothic detail which would have no interest at all. The monuments are, in their way, a reality; their former positions would have to be patched up with unrealities. We have called this a minor reason, but it is one not to be overlooked. We may also add that the eighteenth-century monuments are not all as bad as they are called. There are works among them, some of them bearing the names of sculptors not undistinguished in their day, which have considerable merit as designs; though these, we admit, are mostly among the smaller and less prominent examples.

The second proposition made by the "Morning Post" was that it was time that some definite decision was come to as to the number of new monuments to be erected in a building already so crowded with them. Of course it is. The *entrée* to the Abbey can no longer be open to minor reputations. It has become a more decisive honour than it used to be, since it is evidently impossible now to consent to the erection of new monuments except in the case of men whose title to fame is really of the highest, and is universally admitted. And unless we are to have an entire dearth of great men in the future, which one hopes may not be the case, it is obvious that in a short space of time it will be practically impossible to find space for any more monuments. It is, therefore, of some interest to find Sir W. Richmond reviving the idea, which was much talked of a good many years ago, of building some kind of special annexe to the Abbey for the reception of future monuments; an annexe so arranged as to be practically part of the Abbey church, so that the traditional honour of commemoration within the Abbey may still be kept up.

At the time of the discussion referred to, one suggestion made was that a new national Campo Santo should be erected on the open piece of ground, at present laid out as a public garden, at the south end of the Houses of Parliament. This was rather a fine idea; only it would not carry with it the traditional honour of a memorial in the Abbey. It would grow to have a traditional honour of its own in time,

but for a century or two it would be a new site with no tradition. To satisfy the traditional feeling it would be requisite to add to the Abbey some kind of annexe which would form part of the interior. This may seem a very dangerous thing to talk about, but if carried out with judgment it might be done so as not to be open to the charge of irreverence to the ancient building.

There are three ways in which such a thing might be done. One is, to do what was actually done at the Portuguese abbey church of Batalha; to add to the Abbey, at the west end, an octagonal building specially designed as a monumental chapel, and connected with the west door of the Abbey by a porch common to both. At Batalha the monumental chapel was added at the east end, but that is only a question of conditions of site. In London the monumental chapel might occupy the ground occupied by the rather unfortunate temporary edifice put up for the coronation. The architecture of the Abbey at the west end is of much less value than that of Henry VII.'s chapel, and would not be interfered within any material way by the octagon chapel, except being partially concealed by it from some points of view. This kind of octagon chapel for monumental purposes has architectural precedent: there are other examples besides Batalha. It could hardly, however, be a very spacious one. A second expedient would be to form a new cloister on the north side of the nave, for which there is plenty of room. The third, and we think the best, would be the erection of a new north aisle to the north of the nave. The existing outer wall of the north nave aisle has been very much restored or refaced, but in any case it need not be much interfered with; it would only be hidden from view from the outside. Our idea is that openings would be made in the lower portion of the existing wall, so as to give free circulation into the new aisle and make it part of the church; and the existing aisle windows would merely have their glass taken out, and remain as traceried openings into the new aisle.

This proposal was actually put forward at the time when the whole subject, as we have already mentioned, was largely discussed some twenty or five-and-twenty years ago, and the idea was received with a good deal of favour at the time. As for those who would call such a proceeding "vandalism," and so on, we can only reply that there has never been any time, when architecture was a living art, when men were not ready without scruple to add to an older building whatever was necessary for its new or more extended purposes, often without the slightest care even to assimilate the style of the additional building with that of the older one. Henry VII.'s chapel itself is an example.

The Wellington Monument.

IT is a satisfaction to see Stevens's great monument at last completed as he designed it; though one cannot help thinking sadly of the years of struggle which the sculptor went through over it, amid an official generation which had little sympathy with him and little understanding of his genius. To some extent he may have given cause for dissatisfaction by a dilatoriness over the work which even now it is not very easy to understand, but which probably arose from the fact that he was an artist peculiarly sensitive and hard to please over his own work. Michelangelo, no doubt, would have turned out such a monument in two or three years; but he was one of the men of genius who enjoy also a robust temperament, sure of their powers, and not sensitive to criticism. Stevens, with a genius somewhat resembling that of Michelangelo, was evidently widely different in personal character.

The Wellington monument has undergone a strange history, too characteristic of the way we treat works of art in this country. The equestrian statue, which was intended to form its terminal, and for which the upper portion was specially designed as a pedestal, was condemned by a Dean as an unsuitable object in a church, and the work left manifestly incomplete. Then it was set up in a side chapel where it could only be seen as a silhouette

against the light. Nor is its present position quite satisfactory from an artistic point of view; it is too lofty for its situation under the arch, which presses down too closely over the crowning figure. Its real position, both in an architectural and sculptural sense, should have been in the centre of the nave; but one can understand that there would be ritualistic objections to such a position; it would have been thought too like the intrusion of a secular monument into the centre of a place of worship. But it is a pity; it would have had a grand effect in that position.

Now that the equestrian statue is in its place, it may be said that its execution, from the rather rough models left by the sculptor, is exceedingly satisfactory; nor does it appear by any means too large in scale for the rest of the work; in fact, it appears smaller and less prominent than might have been expected. It was well judged of the sculptor to represent Wellington bareheaded; the introduction of the orthodox cocked hat would have given the figure a prosaic and too realistic appearance. What is to be regretted is that the height of the monument and the conditions of light are such that it is hardly possible to see properly the two grand supporting groups of sculpture. On a very bright day it may be better, but we have unfortunately so few very bright days; and under ordinary circumstances only those who have seen the model of the "Valour and Cowardice" group at a lower level in the South Kensington Museum will be able to realise its power fully; the spectator who sees it only in its present position will have to take it a good deal on trust. The whole monument could only be really seen and judged of properly, in its sculptural details, if it were placed in an arena with raised steps around it, so that it could be looked at from a higher level than the floor on which it stands.

As an architectural and sculptural composition it is entirely satisfying; there are some minor details which are not quite so good. Had such a monument been carried out in France, the sculptor would have been required to work in collaboration with an architect; and in that case probably we should not have seen the rather ragged-looking relief ornament on the surface of the plinth moulding, which is not very architectural in feeling; nor probably should we have seen the rather weak detail of the realistic rope knots in bronze which divide off the panels on which the names of the battles are inscribed. Sculptors seldom fully understand architectural detail of this kind. The finest detail of the whole work, except, of course, the bronze figure groups, is the treatment of the bronze sarcophagus, solid and monumental in effect, yet with a fine elaboration and flow of line in the decoration.

With the recollection of this detail in one's mind, it is very annoying to see, when leaving the cathedral by the west doorway, the two wretched lamp-posts which stand on the blocking against which the steps abut at each side. They look like common street lamp-posts put there as a makeshift. Surely there ought to be something better designed, more worthy of the façade, to occupy this prominent position in connection with it.

The Legros Exhibition.

THE collection of works by the late Professor Legros, at the Society of Fine Arts, gives a remarkable impression of his artistic genius. One feels as if looking at a collection of works of an Old Master, so far are these from any of the fashions of art of the present day. The small sepia drawings and etchings are remarkable for their combination of human pathos with a keen perception of composition. In his portrayal of human life Legros was in art rather what Crabbe was in poetry; it is not the beauty so much as the pathos and misery of life that he portrays; but in all these scenes he never forgets to be an artist in line and composition. His landscape sketches, often slight, always have a largeness of scale and effect; and the two large landscapes in oil that are included are different in character from any other contemporary landscape painting; low in tone and colour, but perfectly complete in their balance of composition and effect; the "Souvenir of Burgundy" is especially fine. "The Storm" with an old cottage in the centre of the picture,

under a threatening sky, is exceedingly powerful. The design for "A Basin with Masks and Children," for execution in silver, is an evidence of the versatility of his genius.

The Proposed New Guildhall Galleries.

THE extensions to the Guildhall, on which it is proposed to spend £50,000, are to include, it appears, new picture galleries for the permanent collection and for loan exhibitions; three galleries, each 70 feet long, and various smaller rooms, and it is hoped that these new galleries will form an additional inducement to owners to give or lend important pictures. Now is the time, therefore, to consider the question of the best method of lighting these galleries. A great deal has been said recently about the mistake in lighting the new rooms at the National Gallery whereby the light is concentrated on the centre of the room instead of on the pictures. Discussions of this kind are of no value unless they lead to practical results, and the point ought to be fully considered before the new Guildhall Galleries are planned.

National Federation of Building Trades Employers.

TODAY (Wednesday) is being held, in the Balmora Room of the Trocadero Restaurant, Piccadilly Circus, London, the annual general meeting of the National Federation of Building Trades Employers of Great Britain and Ireland. The agenda, always interesting, contains this year many items of exceptional importance. A proposed alteration in the methods of Federation finance may be passed over as a matter of purely domestic concern. Of greater public interest is a proposal to amend the National Form of Contract; and, akin to it, and of similar far-reaching effect is a proposal by the Institute of Builders for a Form of Sub-contract for use where specialists employ made sub-contractors. The details will doubtless appear later, when they may be more fittingly considered in the light of the discussion upon them and its issue. Other items of general trade importance are a suggestion from Yorkshire as to fair-wages clauses in contracts; a proposal as to provisional sums in quantities; the question of standard wages and increased cost of living; the supply of goods to the public at trade prices; the expediency of closer alliance with kindred trades; and discussion as to future action with regard to the Insurance Act. The National Conciliation Board rules are to be the subject of several proposals for amendment; and the rules of the national joint agreement with the plasterers will come up for consideration. Added to this very full programme will be the usual election of officers, which, however, is always conducted with businesslike expedition. In the ordinary course, the president, Mr. J. W. White, of Sunderland, will be to be congratulated on a strenuous and statesmanlike year of office, during which he has figured conspicuously and effectually in matters of truly national importance, distinguished from the merely internal affairs of the Federation, will no doubt be succeeded in the chair by Mr. James Wright, of Nottingham, whose position of senior vice-president falls in due rotation to Mr. Frederick Higginson of London. Mr. Wright has been a charmingly unassuming but energetic worker in the Federation movement since 1895. Mr. White's energetic defence of the interests of the entire industry, and the conspicuously general character of so many of the items above enumerated, lead us to point to the very serious question that arises out of this important series of articles which we have printed, "What is Wanted in the Building Trades." The obvious inference is, that large numbers of outsiders, who contribute neither money nor energy to the National Federation, are nevertheless profiting greatly by its labours. This is obviously and flagrantly unfair. But what is the remedy? Probably it lies in the direction hinted at in our article, "Eliminate the unfit, as is done in Germany, by compelling a man to show just cause for assuming the honourable title of builder, and but very few of those who obtain the credentials will find it expedient to remain outside the organisation which, it is hoped, will in due time be able to secure for them this recognised status."

ON THE NEED FOR AN ENGLISH SCHOOL OF ARCHITECTURE.

AN INTERVIEW WITH PROFESSOR REILLY.

THE whole question of architectural education as carried out in this country at the present time is raised by the new problems in design set for the Final Examination of the Royal Institute of British Architects; and in view of the fact that the subjects given are cognate to those of the Architectural School of Liverpool University, and included in the Liverpool Sketch-Book, we have thought it of interest to publish the following interview with Professor Reilly, under whose direction the Liverpool School is making such a distinct advance.

Asked what his opinion was on the probable effect of the new R.I.B.A. scheme on the future training of English architects, Professor Reilly said:—

"This new scheme of designs seems to me the most important step in architectural education that the Institute has taken for many years. It is the first frank recognition that training in design should be seriously considered, and that facility in design, like facility in draughtsmanship, can only be obtained by constant practice. Till now we have been apt as a nation to suppose that if the student were well grounded in history and building construction the power to design would follow as some heaven-sent blessing on his labours. All that the Institute, so far, has required has been one design and the making of certain working drawings during the Final Examination. This latter did not, from the subjects set, test so much the student's power of conceiving abstract form as his ability to construct. There might be something to say for this in a merely qualifying examination, such as the old Final. In the new Final, however, the student is invited to show his ability in and his enthusiasm for his art in some direction of his choice, and can obtain distinction therein. With an examination conceived on these more liberal lines it is appropriate that the Institute should ask beforehand for evidence of training in the main business of architects—that is, in designing.

"As to the immediate effect of these designs set at regular intervals, I hope it will be somewhat similar to what has happened in America. Students there work, all over the continent, at a series of problems set by the Beaux-Arts Society. For this purpose a group of students and assistants will hire a big room and form an atelier, inviting leading architects to criticise their work. These ateliers are either attached to the local school or architectural society, or are entirely independent. A healthy rivalry springs up between the various ateliers, which the building papers assist by publishing the best designs of each. When, therefore, two American students meet, though one may come from the East and the other from the West, they have at once a great deal in common and a great deal to discuss. Each has worked at the same problems, and each can learn something from hearing about the other's solutions. I hope the same results will follow here. I hope the local societies who have to judge these designs in the first instance will form ateliers and offer prizes. I hope in time the scope of the problems will be enlarged—the size of the paper (which is fixed at imperial more for the benefit of the examiners than on the students' account) must very soon be—and that a new enthusiasm for design will bind together into one body all English students of architecture. It is a great step forward that one of each pair of subjects should be a monumental design, to be shown in shaded and rendered drawings. I hope ambitious students will always choose the more monumental subject. By making shaded drawings they will familiarise themselves with solid forms rather than with mere outlines.

"The other subject is meant, I presume, for the country student who may not have the opportunity of school training in design and drawing. But whichever is chosen, the mere fact of working through a series of designs will help to preserve to each student his own individuality. He will learn to express himself, and thereby his ambitions

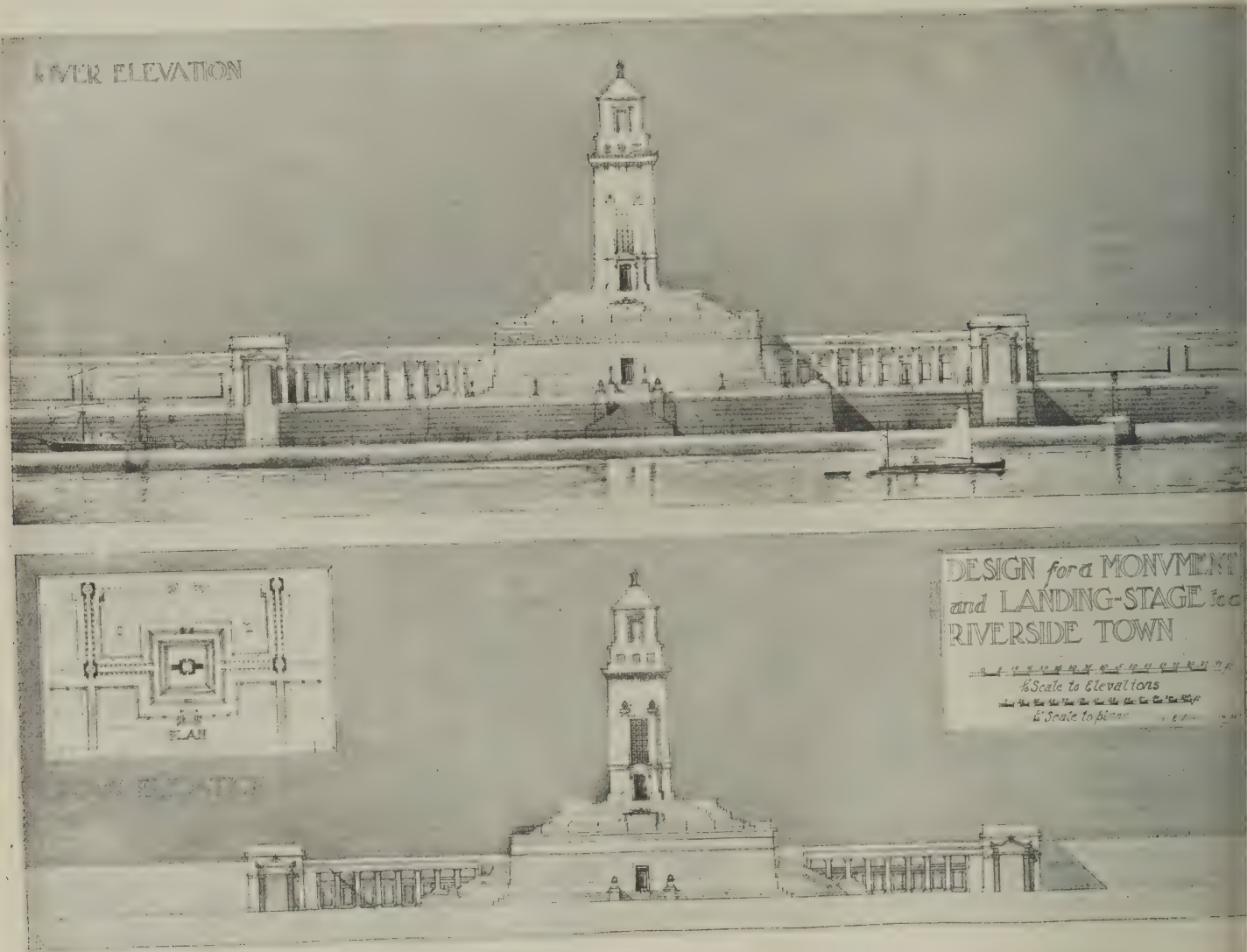
will be kept alive. He will not be content to remain forever an assistant. This being so, I hope the young architect will claim more time for himself. Masters are naturally a little apt to think only of their own work and not of their assistants' careers. But this will right itself if the proper spirit is abroad, and with all the students of the Empire doing the same designs at the same time I have great hope that a new life and new enthusiasm will arise to the great advantage of our architecture."

"The School of Architecture at Liverpool University has a definite scheme of study based on Greek work, has it not?"

"The school has a definite scheme. To my mind it could not be a school except in a very elementary sense of the word without one. The main idea underlying the teaching is that the students should look at each problem from what may be called the monumental point of view: that is to say, they should seek first in their designs the qualities of unity (especially of plan), scale, and refinement. These are qualities that are included in the idea of the monument, and they obviously are best exemplified in Greek architecture. In this way, therefore, the school designs may be said to be based on Greek work. But the subjects set are modern subjects, and copies of Greek buildings do not, and could not, result, any more than they did in the 'fifties and 'sixties during the neo-Grec period in France. In any case, it is necessary to give students some convention in which to work; if you do not, the school will form a bad one of its own—a group of students will start *l'art nouveau* or something of the sort. You cannot have a number of people working together in one room each using a different style. It is one of the advantages of school training that it provides an atmosphere—a tradition. All we try to do at



PROFESSOR C. H. REILLY, M.A., A.R.I.B.A.



BY W. E. DAVIES.

From "The Liverpool Architectural Sketch-Book."

Liverpool is to ensure that the purest forms are used, and we hope the result works out in monumentally conceived buildings."

"And you consider that it is better to go back to the original source for inspiration, than to reinterpret what has already been interpreted by the Renaissance?"

"Certainly. Why should we trouble about immature styles, except historically? In the days of the Italian Renaissance Greek detail was not known, though even then the best architects, like Peruzzi, by refining on Roman detail reached something akin to it. The same remark applies to the work of Lescot and Goujon. But now that we know the old wine we cannot pretend that the new is better. In the progress towards purer detail the history of the individual architect has recently been the history of the race. Twenty years ago nearly everyone was designing in some Early Renaissance or immature style like Elizabethan or François Premier. Then the same architects took a larger scale and based their work on that of Wren and Palladio, while to-day every competition reveals the presence of a strong movement towards Greek forms."

"The criticism has been made that such training as you adopt at Liverpool is calculated to produce men with one idea only, and that there is a strong tendency towards mere classicism, cold and formal, like the early nineteenth century gave us. What do you say to that?"

"I think you are right in saying that the early nineteenth-century architecture in England was, on the whole, cold and formal. It was so because, apart from the work of the leading men, like Soane, Cockerell, and Greek

Thompson, a great deal of it was little better than copy. A copy—even of a Greek portico—is always a dead thing. The corresponding work in France, however, is a very different matter. Would anyone call Ginain's Ecole Médicinal or Duc's Palais de Justice cold or formal? The fact is, I suppose, the French were artists, whereas we were at that time mainly archaeologists. If we are artists to-day we need fear no undue formalism. With the vast variety of buildings that modern civilisation requires, there need be no fear that one form, and one form only, will restrict St. George's Hall can simply serve the purpose of a hall, a series of halls; it can never make a warehouse or an office building. And if we examine modern American buildings we do not find one idea, one *motif* only, prevailing. What we do find, however, is that one *motif* is selected for one kind of building—as the Pantheon *motif* for university libraries. In this way character is gradually acquired. In time a building with the Pantheon *motif* will in America suggest a dignified storehouse of books."

"But do you not think that, while founding the main lines of design on Greek work, there should always be an attempt to put fresh life into the detail at least, so as to give it an individuality of our own day?"

"Artists are bound to do this. We are not more exacting like our predecessors than the problems we have to solve are exactly like theirs. All I mean by the use of Greek detail and Classic *motifs* is that we should take the highest and finest forms as our standard rather than the half-understood detail of other centuries. To copy that, to base our design upon that, is to-day the merest affectation. It is only logical to go back to the source for inspiration. It is the same in all the arts. The last post-impressionist

movement in painting is, I think, a reaction towards simpler forms and cleaner drawing; the similarity between some of Gauguin's paintings and archaic Greek sculpture is very pronounced."

"Is it not a fact that there is a danger of overlooking the necessities and actualities of everyday practice (such as the average architect will have to face) when attention is so largely devoted to problems of design in 'the grand manner'?"

"Whatever manner we work in, 'grand' or otherwise, becomes an affectation if it is not consistently applied. In no past period of architecture was there one style for cottages and another for mansions. The charm of the former—its character—very often lies in its implicit relation to larger buildings. If you take a town which is largely eighteenth century, like St. Ives, Cornwall, you will find the same square proportions, the same square sash windows and low-pitched roofs in all the houses, from the fishermen's cottages (of which the town mainly consists) to the squire's mansion. Even the smallest cottages have a definite eighteenth-century character, and yet remain cottages—ideal cottages, as the present artist population seems to think. I maintain that the architect trained in what is called 'the grand manner' is more likely to build a really good cottage than the man who has only considered cottages. If he is an artist, or has any taste at all, he will not make the elementary mistake of building a pretentious cottage, but at the same time he will not build one affecting to belong to some other century—early a subtler form of pretentiousness. His cottage should have the same sort of relation to larger work that country clothes by a good tailor have to town clothes by the same man. We know that a trellis porch may add an indefinable sense of style to the squarest, simplest cottage. There is no reason to my mind, therefore, why in the pursuit of a more monumental and more worthy architecture for our public buildings all classes of buildings should not profit. Good architecture is not a trick—he result of a recipe: like any other art, it has its origin in emotion sincerely felt. All that training can do is to facilitate its expression."

"Your opinion is, then, that as regards freedom in the practice of architecture, there is a great deal too much of that element in the present condition of affairs, and that since the beginning of the nineteenth century the greatest curse upon English architects has been their liberty of choice coupled with lack of architectural education, resulting in a chaos of style frequently expressed by the term 'free classic'?"

"Yes, most emphatically."

"Then there arises the question of construction. It is understood, is it not, that this merits as much attention as 'design' itself, when, as a fact, the two are interwoven? And how do you regard in relation to the Liverpool School of Architecture, the claims of modern methods of building, and their expression in architecture? For example, there is reinforced concrete: how do you find an expression for that in work which is based on Greek models?"

"Construction is the architect's technique. As the painter must learn to handle his materials, so the architect must of necessity learn to construct. Nevertheless, I do not believe at the outset in burdening the student with all the minutiae of ordinary building construction and materials. He need not know, for instance, how cement is made. Teach him what is constructable, and only let him design such things. Let him know the average proportion of solids to voids on certain types of plan. He will learn better the details of carpentry joints—of doors and windows even—a little later in his career. Such things anyone can find out when necessary: they are not of the essence of architecture. I think we may easily make construction a fetish, and forget the architect's real position—that of the master-mind conceiving his building as a whole, its masses, proportions and rhythms before a stone is set, and giving to them their high spiritual significance. On the one side there is a spiritual side to a picture as well as a material side, and strangely enough it is the Ruskinians who have chosen the material side."

"As to reinforced concrete, I do not think it will for many centuries lead to new forms of architectural expression. I doubt if it will ever be used externally on any but engineering works. Architectural forms which may in the first instance have arisen out of material necessities in the long process of evolution gain other meanings equally important, or even more so. We use an Order more often to express dignity than for mere strength, and dignity will still be necessary, whether buildings are made of reinforced concrete or not. New needs like those to which the skyscraper answers in America are more likely to alter the terms of architectural expression than any new materials."

"Finally, then, you would like to see the neo-Grec movement an established thing in this country, to the practical exclusion of other styles; that is to say, so that the general body of practising architects might be counted on to produce buildings of good average merit, and closely related to one another in their character of design; just as, for example, the bulk of the work done under the Georges can be designated 'Georgian'?"

"Yes, that is the condition of things I should like to see if you interpret the term 'neo-Grec' sufficiently widely. Schools of design have this great advantage, that while they do not hamper the genius from giving individual expression to his work, they prevent the average man from falling below a certain level. How else can we explain the fact that we see no really bad Georgian work, no really bad Early English, no really bad Louis Seize? The character is everywhere maintained. The average man, when once a standard of taste is established, is only anxious not to go outside it and betray himself. Where there is little cohesion among architects, as during the last two decades, the average man on the other hand is tempted to think himself a genius and to turn things upside down for the mere fun of the thing."

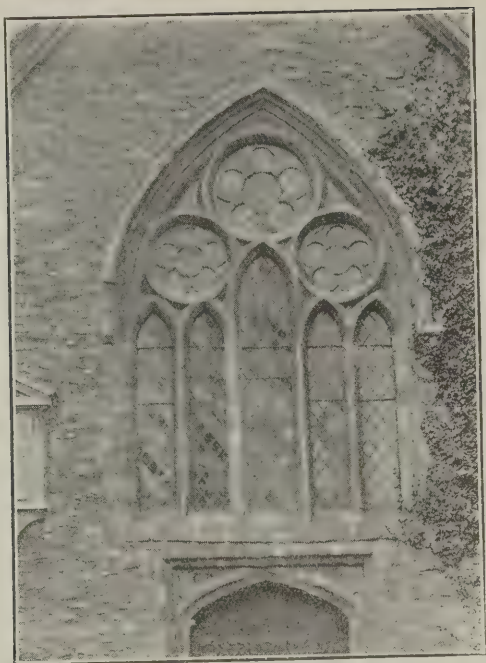
THE UNITY AND DIFFERENCE IN ART AND CRAFT.

BY THACKERAY TURNER, F.R.I.B.A., F.S.A.

ON Thursday last Mr. Thackeray Turner read a paper on "The Unity and Difference in Art and Craft" at Carpenters' Hall, London, this being the first of a series on various subjects by various authors arranged by the Worshipful Company of Carpenters. Turning first to an analysis of his subject, Mr. Turner said it seemed that art must have an element of creation in it—there could not be life without creation. Art could not exist without craft, though the painter and sculptor could of course each be his own craftsman. But craft in a low form might exist without art. The pretty reed work done by the Norfolk thatchers was delightful as a craft, but could scarcely be called an art. There could hardly be art in the things that had been done just the same thousands of times before and on the same lines. The lecturer thought that a distinction should be drawn between the craftsman who was purely a skilful workman and the artificer whose work had an element of art in it; but Mr. Turner added that in his



STOCK PATTERNS OF ENGLISH AND ITALIAN BEDSTEADS.



Original Fourteenth-Century Window.



Modern Replica, by the late Sir Gilbert Scott.

A COMPARISON OF TWO WINDOWS IN GODALMING CHURCH.

lecture he would keep to the word "craftsman." The number was few of those who, having the power of design and composition, were artists, as compared with those who, skilful in the use of tools, could carry out work in an intelligent way, possessing the right to be called craftsmen.

A building, the author of which is inspired with poetic and noble ideas, will not have the effect upon us which our mediæval architecture has, if the craftsmen are not of a higher order than our machine craftsmen. In illustration of this point, the lecturer showed on the screen (1) a modern window by the late Sir Gilbert Scott, and (2) a fourteenth-century window, both from Godalming Church. The latter was obviously carried out by men who knew exactly what they were making, and who did not trouble to shape every curve with a pair of compasses, whereas the former was a pure copy. Can any one say there is no such thing as art when they compare these two windows? (See illustrations.)

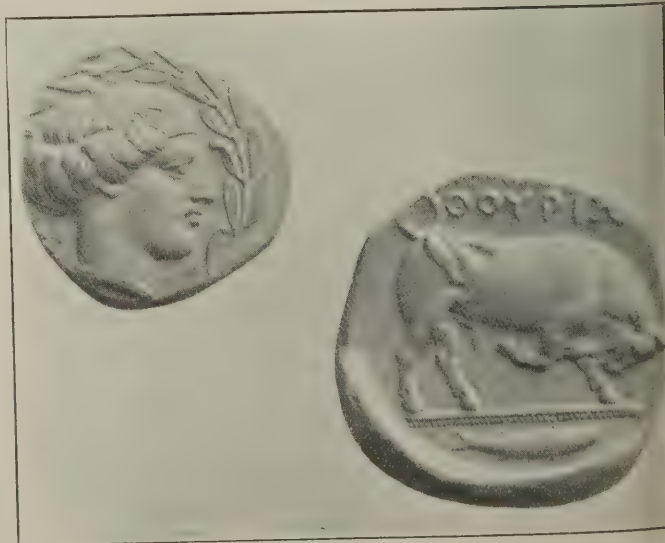
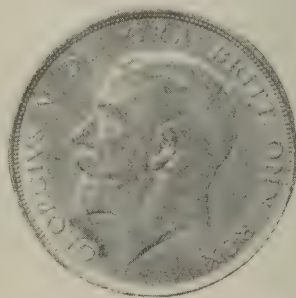
The lecturer next showed two iron electric lamp-stands, in illustration of his comparisons. Concerning that on the left (see p. 119) he stated that it was made by Mr. Ernest Grimson, and was clearly a work of art, the craftsmanship being delightful.

The ideal craftsman will always have sufficient interest in his work to make him think out the details and treatment of what he is at work upon, so that, even in repeating his own work, he will be certain to make variations which may be so slight as to escape the notice of the ordinary observer; and this human quality will just give that something which will keep it alive, and turn the subject into a work of art. That is the keynote—"Keep it alive!" If the human mind can be seen in man's work, there need be no fear that the work will lack interest and life.

Next were shown two iron bedsteads (see p. 117), the one such as can be bought in a good English shop; the other an ordinary article of commerce in the Italian shops. The former was described as inoffensive, but giving no pleasure in the contemplation; the latter, however, gave interest and pleasure to the observer.

It is easier to work with our hands than with our heads. It is soothing to have some nice straightforward piece of work to do, but it should be the reward of mental work. The author remembered seeing at Merton Abbey William Morris at work upon a large drawing for a cretonne pattern. A fashionably dressed young man called to see Morris, who, during the interview, went on working. After a pause the young man said, "Can't you let all that spotting which you are doing be done by some draughtsman or clerk?" Morris burst out with the reply, "Do you think

that I am such a fool, after I have had all the grind of making this pattern and working it out, that I am going to let some other fool have the fun of spotting it?" To the lecturer's mind, it was quite wrong that one man should do all the thinking—that is, all the designing—whilst another, or others, should do all the making and have no thinking to do. In architecture, however, it is quite possible for one man to create a grand scheme, but to carry it out ought to be the work of many minds. Each craftsman ought to think as he works, and then noble buildings, such as were created in mediæval times, will result. It is astonishing how much interest—that is, humanity, or life—each workman can put into his work if he will take interest in it. If he will only *think*, he

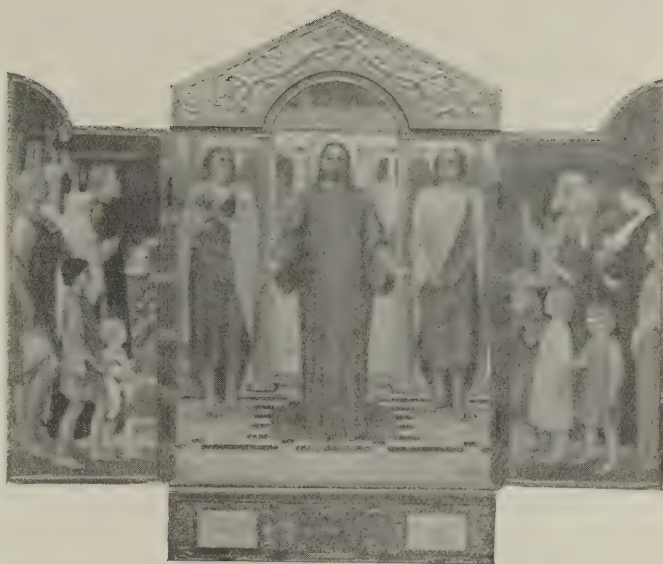


A COMPARISON OF ENGLISH AND GREEK COINS.

will certainly be rewarded by great pleasure, and also by his work becoming art—that is, having life and giving pleasure to others. When a workman asks the lecturer a question about the work upon which they are engaged, the lecturer finds it an excellent formula to say, "Well, what do you think?" The good men respond, the bad ones do not, and show that they think you are asking for what they are not paid for.

The lecturer next showed slides of "Battens' wonderful altar-piece" at Kensal Rise, and of a well-known picture by Giorgione, and he did not think that Battens' picture suffered by the comparison.

To illustrate the unity of art and craft, Mr. Turner took two imaginary cases. In the first there is an able architect, who makes complete drawings of every detail, but has to trust to what the lecturer called machine craftsmen, whom he fails to inspire. In the second case there is a weak architect, with no great power of design. He does not give instruction in all details, but the true craftsmen understand their work, and the building, although having no great force of character from the one man, is nevertheless full of the feeling and characteristics of the many. Which of these two buildings will give the least pain or cause the most pleasure? The lecturer believed that the absence of



ALTAR PIECE BY BATTENS AT KENSAL RISE.

produce an ugly effect. Our craftsmen are apt to sacrifice everything to accuracy.

Referring to the subject of scale, or size, the lecturer said he felt sure that the sooner the architect, sculptor, and painter can get to work upon the actual piece of work he has to do, the better will be his chance of success. He gave instances of the way in which work suffers from being executed to a different size from that to which it is designed—of a design for a half-crown, which, when drawn to a size of about 6 ins. across, seemed a masterpiece, but lost all its merits in the reduction. A glance at the Greek coins (p. 118) would not leave much doubt that they were designed to their real size, and that the man who made the design made also the die.

After offering some excellent advice, based largely upon the thesis that "the perfect craftsman is the man who is craftsman and artist combined," the lecturer concluded by stating that he was very hopeful of the art work that is being done in this country. He was certain that since architects have brought themselves to break from the fetters of the styles and to use their common sense and natural instincts in designing, and have seen the necessity of honouring the craftsman, many delightful buildings have been erected, and of these he showed slides of a few.

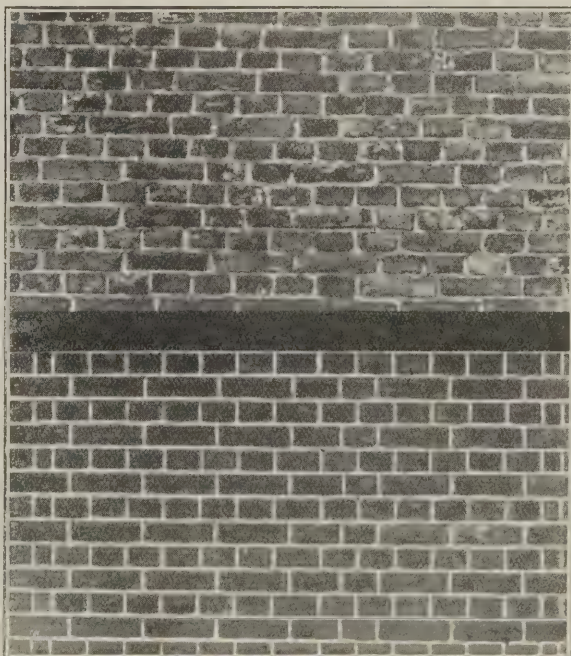


TWO EXAMPLES OF MODERN LAMP STANDS.

good design would be felt far less than the absence of good craftsmanship.

But there is no reason why the conceiver of the whole building should not be in complete harmony with the craftsmen, and have the power of drawing out the best qualities of each craft, and yet of keeping all the crafts in their places and subservient to one another.

Having remarked that if a craftsman spaces out his work by eye, then, provided he is skilful, inaccuracies will not be obvious, and the whole work will gain in richness, the lecturer showed a slide of brickwork detail from Unstead Manor House, near Godalming, in which the work had, he thought, some bearing on the reference to spacing. In the slide (see illustration) brickwork of the fifteenth century as contrasted with some exceptionally good modern made brickwork. In both cases, old English bond—a row of stretchers and a row of headers alternately—was used. In the modern work the bond is rigorously regular. In the old work the pattern is frequently varied, with most pleasing results. The lecturer thought that such clauses in specifications as "The bricks are to be of uniform colour" and "the perpends are to be kept true" were wrong. To be pretty, the bricks should vary in colour as much as possible; and perpendicular joints that are exactly over one another



A COMPARISON OF ANCIENT AND MODERN BRICKWORK.

COLOUR AS APPLIED TO ARCHITECTURE.*

By Sir ALFRED EAST, A.R.A., Hon. A.R.I.B.A., and EDGAR WOOD, F.R.I.B.A.

The question of colour, as considered respectively by the painter and the architect, was dealt with quite typically by Sir Alfred East and Mr. Edgar Wood, at last week's meeting of the R.I.B.A. The two points of view were not difficult to reconcile, the two authors being in substantial agreement upon the main points that they put forward; and, of course, both concurred in deploring the comparative neglect of colour in modern architecture, and in advocating more sympathetic co-operation between painter and architect.

I.—BY SIR ALFRED EAST.

IN the past, when the conditions of transit were more difficult, the builder more frequently used the material he found close at hand, and often obtained a feeling of breadth and simplicity of colour which the modern builder, with his great facility of obtaining foreign materials, missed. The greater choice might tempt to unfortunate selection.

The art of retaining the peculiar quality of the material is of great importance. The architect who works within the limit marked out for him by local conditions and succeeds in a stronger artistic position than he who, having so large a choice, fails by being too generous

The Painter and the Architect.

The architect is, or should be, responsible for the absolute completion of a public building, and it is unfair to criticise him if some local authority assumes the responsibility of its decoration. It would be a great step on the way to obtain a perfect and completed scheme if the architect and the painter were brought into more intimate contact, and, by the interchange of ideas, to help each other to understand the peculiar claims of their individual crafts. During the last generation the architect has taken the sculptor more thoroughly into his confidence, and the author would like to see the same confidence extended to the painter. The place of the mural painting should have been considered by the architect in the creation of his plan, as much as that of the sculptor; neither is required for the actual structural qualities of the building, but both are a necessity for its perfect completeness.

Colour and Space.

The fitness of colour for decorative purpose is a question that has never been adjusted by any rule except that rule which is applied equally to the architect and sculptor. The first and most important is the sense of scale. The colour scheme may be satisfactory as a scheme, while the areas of the different colours employed are not in keeping with the scale of the building, where the architect may not have considered the space suitable for the work of the painter or sculptor in his design. The great problem of the application of colour to decoration has been solved in some instances with success; and in every case that success has been achieved by the perfect sympathy of those concerned in its production. The painter may spoil the work of the architect if there be not that sympathy. For instance, he may have his scale too large, the result being to diminish the dignity of the building. If, on the contrary, his scale be too small, the *raison d'être* of the painting is not secured. This sense of proportion is the first quality the painter has to establish.

Colour is entirely altered in its decorative quality by the shapes and sizes of its display. A certain arrangement of colour of certain sizes in conjunction may completely destroy the object of the architect, and yet the same series with a different arrangement may be perfectly satisfactory. Any colour expressed in angular forms must convey a different decorative sense from the same colour displayed by rounded forms. Herein lies a very subtle problem for the decorator, and one that has not hitherto been considered in its fullest significance.

The Question of Form.

The painter should not endanger the object he has in view by selecting such forms as are totally unfit to express a conjunction of colour, or to support the mental impression aroused by the architecture. He must not only discover what form will best express each individual colour, but be conscious of the difference of effect of these forms when brought into conjunction. One colour may be fine in quality alone, but brought into contact with others, may be discordant; not only that, but in their conjunction he may lose the peculiar value of an individual colour by the dominancy of another in juxtaposition.

The painter has to consider the masses and details of the building to be decorated; his decoration should be so sensitive that it should support not only the larger masses of the structure, but each detail by which the architect has himself embellished his structure. He must be as sensitive as the architect in sustaining the purpose of its being; he must not in any way destroy or warp such an object; he has no right to take away the knowledge that there is a surface on which his painting is superimposed, or remove by some optical illusion any structural quality of the building which is necessary for its support. All these things he has to consider, and, if he were a great decorator, he would consider these; but, if he be a victim of some local authority, who dictates to him what he shall do, or how he shall do it, then failure is certain.

The weight or intensity of colour should be just of that strength that helps the purpose. How often the opposite fact is revealed in the work that we see in some of the buildings of to-day!

II.—BY EDGAR WOOD, F.R.I.B.A.

Beautiful colour schemes in the majority of cases owe their origin to the East.

Colour is from the East.

A comparison between the Greek or Gothic use of colour as compared with that of the East resolves itself into a conflict between two opposing and antagonistic expressions, the expression of form and the appeal of colour, antagonistic because they represent two irreconcilable intentions. Colour is emotional, appealing to us by its emotional and sensuous

faculties; it comes to us before form, representing nothing in itself, dependent upon the emotional feeling it produces, and its rightful appeal to sensuous sensibility, whilst form is intellectual, and its appeal is the outcome of reason.

Treatment of Walls.

Turning to domestic work, one problem that all architects have to consider is the right or the best treatment of the walls that will assist the easel picture, or, as some would say, to minimise the defects of the same. It is often the problem of combining two distinct and conflicting principles. Scale effects the result naturally, but that is only a question of degree; the objectionable results of pictures and frames being out of proportion to their spaces and walls is only an accentuation of the difficulty.

What is Decoration?

Though the word "decoration" is frequently used, it is difficult, if not impossible, actually to define its limitation; it is, in consequence, employed in many and distinctly different ways, and certainly to many paintings of a very different treatment. It is generally accepted as embodying a simplifying of masses, of flatness of treatment, curtailing a tendency to absence of shadow, confinement to simple planes, careful composition in the proportionable filling of space, all combined with a certain architectural dignity or structural feeling by form and line, producing a mural feeling and a mural rest. The author could think of no stronger guidance to decorative effect than the influence upon the painter of the walls themselves, provided he will allow their unconscious appeal its full scope by executing the work upon the site.

The author advocated the judicious employment of drapery, rich or simple according to what it has to receive, never too rich as to overpower the picture to which it serves as a background, and never too simple as not to sustain the interest that the picture creates. The drapery itself also adds considerably to the look of comfort in a room; but in its selection, as in all treatments, it will always be remembered that it has not only to receive pictures, but, what is more important, it has also to serve as a background for the living and their dresses.

Surface Means Colour.

Marble is one of the most beautiful materials that Nature has provided for our service; but it never has by its inherent qualities alone competed with the best of man's contribution in its æsthetic appeal; it will never give the same convincing satisfaction that human effort has given us when he contributes the painted wall, and mosaic will even make a stronger appeal than marble because it permits of a greater proportion and display of the human faculty. A surface means colour, either of material applied, and therefore the treatment of it, remembered as quantity alone, has an importance that should justify the architect in his legitimate desire to control the decoration.

Colour and Hard Woods.

There is often a strong hesitation and reluctance on the part of the layman, sometimes shared by architects, to apply colour to hard woods, especially oak. Such a sentiment is human, but it fails to convince the colourist, who only sees his final aim curtailed in its crowning

* Read before the Royal Institute of British Architects on Monday, January 22.

ing result. The failure to realise that hard wood may be employed for durability alone, and therefore especially suitable and worthy of receiving skilled and careful colour treatment, has often deprived us of what would have otherwise been valuable additions to our colour possessions and our colour enjoyment.

The passing away of heraldry and of the necessitous use of armorial bearings has unfortunately deprived us of one useful and decorative source of colour—often the only *motif* and opportunity of relief which was given to the past—and it is difficult and often impossible to supply the place of that jewelled touch of rich colour which was yielded by its special purpose.

Greatly as architects should regret the disastrous separation of painters from architecture, there lies beyond it the cause of it, the endeavour on our part to neglect opportunities that may influence to bring back the painter to our assistance, and that the neglected art of great decoration shall be, so far as we are able, a neglected art no more, but shall continue to embellish our efforts of the future, as it has formerly jewelled and crowned others of the past.

DISCUSSION.

Mr. Gerald Moira, proposing a vote of thanks to the author, said he thought that landscape painting, when done in the manner of Chavannes, was the most beautiful decoration possible. The greatest difficulty experienced by the architect, of course, was the length of his client's purse. If they could only work together more economically, they might yet be able to show something of the George V. era that would be interesting in the future.

Mr. J. D. Crace, seconding the vote of thanks, said that most modern English painters were not sufficiently versed in architecture to understand what it was fighting for, and the architect could not be expected to have his building spoiled by misapplied painting. The decorative painter had the building for his space, and it remained for him to select the best colours to express the structural form. The old painters of the years between 1500 and 1600 never left a picture alone on the wall, but always supported it by accessories, and welded it into the building itself. A scheme of decoration should not be limited to pictures or to certain portions of a building; colour decoration should be distributed so as to form a structural part of the building and yet remain in itself a work of art.

Mr. H. H. Statham said that the basis of consideration of colour in architecture should have been what colour could be got from the materials of a building themselves. He knew that this was a much less intellectual side of the question, but one which, from the architect's point of view, was none the less important. At the present time there was a strong inclination most unjustly to vilify what was called the "easel picture." There was also a very confused idea of the word "decoration." There was, however, a distinction to be drawn between the decorative painting properly so called and the painting which depended upon itself. The finest picture in the National Gallery, Titian's "Bacchus and Ariadne," is not a decorative painting; it was a splendid piece of colour which would assert itself independently of its surroundings. If he had that picture, he would not care upon what wall it was hung. It was certainly undervaluing the

art of painting to say that it must harmonise with its surroundings. Painting had a claim for itself apart from the merely decorative; and so long as painting remained mural decoration alone, it would have to give up something of painting or else clash with architecture. The more they showed the effect of nature in landscape painting, the more they got away from architectural surroundings.

Mr. H. G. Ibberson, in the course of a humorous speech, professed not to understand the more mystical portion of Sir Alfred East's lecture, which associated curved forms with materialism and straight lines with spirituality. The room they were in, for instance, had an arched ceiling, while that in which the refreshments were served had a straight ceiling. Taking their president as typifying spirituality, they should surely change rooms, and serve the refreshments where they then were.

Sir Alfred East, in reply, maintained that it was really essential that painting and sculpture should be included in a dwelling house, and the architect should see that due provision was made for their reception. He disagreed with Mr. Wood's preference for "portables," such as tapestries and draperies, in the decoration of a room. Movability suggested life, and only the dead things remained permanent; that was why architecture was dead.

Mr. Edgar Wood, in reply, said he had been misunderstood if he was thought to have meant that there was no use for the easel picture. What he meant was that the highest ideal of decoration had never been brought about by the easel picture. In this respect, the finest picture galleries in the world would not bear comparison, in impressiveness of effect, with the Sistine Chapel. Some painters—Botticelli, for instance—were essentially mural in their style; but Murillo or Turner were not intended to go beyond the limits of their frames.

DETAILS, OLD & NEW.

The Old Bridge at Newbury.

Mr. R. W. Collier writes: "The series of 'Details, Old and New' is most interesting, and is so deserving of close study that one feels diffidence in questioning the correctness of the elevation of the bridge at Newbury in your issue of January 17th. Comparing this with the photo, the curvature of the cornice is surely not flat enough by a good deal, and, moreover, the number of balusters appears fewer in the elevation than in the photo, showing but two whole ones in the former and four in the latter. The difference considerably affects the character of the work."

[The greatest care is taken by the editor that "Details, Old and New" shall be absolutely accurate, so that any one copying them may realise a known effect, or, again, may vary them, at his own peril, to please his own ideas. It is unfortunate that the bridge at Newbury should prove an exception. What doubtless led to the errors, is the fact that the draughtsman who measured it is now in South Africa, and consequently his notes and measurements had to be plotted by someone else. The notes may have been imperfect, or perhaps confused. We thank our correspondent for writing to point out these mistakes.—Eds. A. and B. J.]

THE OLD COTTAGES AT GUILDFORD.

As a result of the expression of opinion at the recent meeting of the Surrey County Council, it is confidently expected that the Highways and Bridges Committee will recommend the county authority to release the Town Council of Guildford from their undertakings to widen Farnham Road, and so obviate the necessity of demolishing the picturesque old cottages of which illustrations have appeared in this journal—notably the dainty pencil sketch by Mr. Harold Falkner in last week's issue.

With respect to these cottages we have received the following note from Mr. P. M. Stratton, F.R.I.B.A.:—

"I wish to endorse all that Mr. Falkner so ably maintained as to the Guildford cottages in your last issue (January 24th). To an occasional visitor the town lives in the memory quite as much by the impression of these old cottages, as of Abbott's Hospital or the Guildhall. It is not as if your modern builder were likely to replace these walls and roof, steps and chimneys, with anything better. Until that day come, they should be left, a domestic homily on his raw taste, and should he ever see with his eyes and be converted to architecture, I for one hope he will continue to spare them."

THE WESLEYAN CHURCH HOUSE, WESTMINSTER.

In announcing that the Wesleyan Church House at Westminster will be opened in August next, a special contributor to the "Evening Standard" recalls a few data which, while most of them are already familiar to our readers, may be here usefully recapitulated.

The cost of the building is approximately £160,000.

The site is about one-third of the three acres formerly occupied by the old Royal Aquarium Buildings, and the architects, Messrs. Lanchester and Rickards, deemed it advisable to have the foundations 10 ft. deeper than those of the Aquarium.

The dome, which is now approaching completion, will be one of the landmarks of London. It is not so large as that on St. Paul's or the library of the British Museum, but it probably occupies third position. It is 90 ft. in diameter, and the measurement from the ground floor to the top is 220 ft.

It was originally intended to erect two towers over the front of the building, but as these would have interfered with the light and air rights of Westminster Hospital, that part of the scheme had to be abandoned. It is hoped to complete the plan at some future time if the hospital is removed to a more spacious site. The Church House is of Portland stone, which harmonises with the Government buildings that have recently been erected in the neighbourhood.

One of the chief internal features of the building is the large hall, capable of seating 2,600 persons. There is a gallery on three sides. The platform is arranged with a view to accommodating an orchestra of about 100 performers, and an exceptionally fine organ is being built. The large hall is on the first floor, which is reached by a wide staircase of polished grey marble. On the ground floor are two smaller halls, which will accommodate audiences of 600 and 200 respectively, together with a commodious library and committee-rooms. In the basement is a tea-room which will hold nearly a thousand people.

CORRESPONDENCE.

The Fire Resistance of "Eternit" Slates.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—There has recently been circulated anonymously (as though those responsible for it desired to avoid any possible legal consequences) a document which reflects very seriously and unjustly upon the qualities of the fire-resisting asbestos slates manufactured by us under the name of "Eternit"; and as the statements made in this circular are likely to do us much injury, we should be glad if you would allow us to make known the facts of the case through the medium of your columns.

The document in question is a translation from a report in German, issued by the Imperial and Royal Central Commission for Artistic and Historic Monuments, Vienna. It refers particularly to a fire which occurred at Castle Engelstein, near Gmund, the roofs of which were covered with *old process* "Eternit" slates. In this report, Conservator P. Benedikt Hammerl stated that blisters formed on the slates and exploded one after the other with a sound like that of a cannon, scattering thousands of fragments to a distance of 70 metres around the roof; and that in consequence of these explosions it was difficult for the firemen to carry out their work. The Central Commission urged that the Government technical experts should have their attention called to this implied defect in the material. (It may here be pointed out that *these particular slates were "old process" ones which had been manufactured by a method long since abandoned by us.* A different process has now been employed for many years, and the material has been subjected to very severe tests with most satisfactory results.)

The anonymous circulators of this misleading report have refrained from stating the actual facts about these particular slates, and the natural inference is that they were of "Eternit" brand as at present manufactured. This is untrue, and it is necessary that so damaging an insinuation should be at once contradicted.

First of all, it is not at all certain that the old slates behaved as the Conservator stated, for the commander of the Weitra County Fire Brigade, who attended the fire, reported that it was out of the question that anyone could see what actually happened to the roof, as the courtyard was filled with smoke. Minute particles, resembling little scales, were driven across

the yard by the strong wind which was blowing at the time, but none of the men, he stated, were in any way hampered or prevented from approaching the building by reason of these, and as a matter of fact, the brigades from Gross-Schoenau and Weitra were working hard on the particular wing where the slates were used. As a proof of the Conservator's confidence in "Eternit" as at present manufactured, it may be stated that he subsequently gave instructions for the re-roofing, with this material, of another building under his control.

The Imperial and Royal Ministry of Public Works instituted an enquiry into the report in question, and published a statement to the effect that the Imperial Commission had no right to express so derogatory a judgment concerning a roofing material which, in the sense of the building laws, had been accepted and recognised as a fire-resisting roof covering.

The Vienna County Council, by decree of December 17th, 1904, accepted "Eternit" slates, under the provisions of item 50 of the Vienna Building By-Laws, for use as a fire-resisting roofing material within the County Council area of Vienna, in conformity with certain conditions regulating the size of slates, lap, and minimum thickness.

In 1909 several fire tests were carried out under the direction of the commander of the Vienna County Council Fire Brigade and the control and supervision of experts. On that occasion favourable results were obtained with "Eternit" slates. Although one or two slates showed holes and cracks, the roof did not break away; the battening had burnt through, and the rafters had been badly charred, but the whole roof surface held together. Other materials were tested at the same time. Clay tiles and natural slates, laid on battens, crushed through as soon as the battens were burnt, and they immediately fell to the ground, the slates cracking and emitting a crashing noise.

It is on record that on the occasion of a test made on October 29th, 1911, in Voecklabruck, under the supervision of the Technical Commission of the Austrian Imperial Fire Brigades Union, the roof surface of the test building was covered with "Eternit" slates manufactured both under the old and the new process, the former flaking and cracking, and the latter remaining intact. "Eternit" was also tested with a certain natural variety of slate which, being played upon from one hydrant after the fire had been burning for ten minutes, completely cracked and opened up in all directions,

whereas the "Eternit" roof remained intact; only two slates showed hair cracks. Again, it is recorded in the report of the Royal Commission, on the occasion of the fire test made at Linz on October 30th, 1910, it was ascertained that only the "Eternit" roof and the galvanised iron section remained intact, while the sections covered with certain natural slates and other materials were completely destroyed. It is further pointed out that, while the statement of Conservator P. Benedikt Hammerl with respect to the "Eternit" slates made by the old process might be considered as in accordance with the facts, the particles of slate could only have been carried to a distance of 70 metres by the very strong wind which was blowing at the time of the fire. The storm-proof fixing of the slates, their having been subjected to fierce internal heat and sudden external water from the hose, would explain their being thrown farther than any other less solidly attached and heavy material.

Towards the end of this report, it is stated, very truly, that a material which can resist fire from within and without does not exist, and is not expected to by any building law. These building laws prescribe, it is said, that the roof should be covered with a fireproof material—that is to say, a material by means of which the spreading of fire from one roof to another may be prevented for the longest possible time; and "Eternit" had been found to answer all these requirements. The Commission's report concludes with what may be taken as an official apology for the wrong impression created by the report of the Commission for Artistic and Historic Monuments, and instructions are given for the State Surveyors to be enlightened as to the fire resistance of "Eternit."

We hope that the above statement may correct any misunderstanding that may have arisen in consequence of the anonymous circulation in this country of the report to which we have referred.

G. R. SPEAKER AND CO.

London, E.C.

[We are pleased to publish the above letter in vindication of "Eternit" slate. During recent years the use of fire-resisting compositions for the roofs and walls of buildings has greatly increased, the firm engaged in the manufacture of such material, in the form of tiles, slates, and slabs, having in several instances been compelled to extend their premises and to lay down new plant in order to cope with the constantly increasing demand. It is obvious therefore, that if the ne



Before Test. (Seven Various Coverings in Position.)



After Test. "Eternit" Slates shown remaining intact.

A FIRE TEST WITH "EXIFPNIT" SLATES AND OTHER ROOF COVERINGS.

materials is to retain the confidence which it has already secured any criticisms concerning the fireproof qualities should be investigated as soon as they are made, and any misstatements at once corrected.
—EDITORS, ARCHITECTS' AND BUILDERS' JOURNAL.]

Skeleton Frame Buildings.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—We shall be glad if you will kindly allow us the use of your columns in order to make an announcement that will, we feel sure, be of considerable interest to architects and others concerned in steel-frame buildings.

It is enacted in Section 22 of the London Building Act Amendment Act of 1909 (9 Edward VII. cap cxxx.), that, when it is proposed to erect a skeleton frame building, copies of all the plans, sections, and calculations in detail shall be deposited with the district surveyor.

As it will manifestly be convenient alike to the architect, engineer, and district surveyor that these drawings and calculations shall be submitted upon a uniform basis, thus greatly reducing the labour of making and checking the calculations, the District Surveyors' Association (Incorporated) have, with the co-operation of the Science Standing Committee of the Royal Institute of British Architects and others, drawn up a scheme to be adopted by persons depositing plans, sections, and calculations with the district surveyor.

This scheme is now completed, and copies may be obtained of the Association's publishers. It provides for a uniform system of nomenclature, the adoption of uniform symbols and uniform calculation sheets for pillars, beams, and foundations. It also contains the formulæ necessary for making the calculations, a schedule of weights of materials, and a number of tables of value.

(Signed) WILFRED J. HARDCASTLE,
President,

BERNARD DICKSEE,

Hon. Secretary,

District Surveyors' Association (Incorporated), 9, Conduit Street, W.

Government Architectural Assistants.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Adverting to the answer given in the House of Commons by Mr. Dudley Ward, as representing the First Commissioner, on November 24th last, when promising to consider establishment for the "Architectural Assistant" class, I may be allowed to point out that he spoke of the consequent sacrifice of income demanded by the regulations "when becoming established to pay for pensions, etc."; it should be understood that the "Assistant Architects" Civil Service Examination (the present unsatisfactory method of recruiting for the establishment) was altered from an open to a nominated one, and restricted to "draughtsmen" in the Department in 1902, and that this was to be regarded as an opportunity expressly intended in future as some recognition of the long and efficient services of the "Senior Draughtsmen" class (since 1907 termed "Architectural Assistants"), who were in receipt of £165, and upwards, per annum, and the salary was fixed, for those candidates who obtained established posts, at £150 per annum (subsequently £200); and so the Treasury rule of "sacrifice of income,"

to the extent of £15 or more, would have been met.

But as these senior men had already been searchingly examined for years past by their Board in carrying out their daily duties, it seems they naturally expected establishment without further test, and did not respond to the invitation to be nominated, and so, for the past ten years, this Treasury rule has been ignored by the Department, and Junior Draughtsmen nominated, mostly with short service (some only just attained the minimum age of 23, and some with only six months' service), and the successful ones have thus had their salaries *increased*, not diminished, to the extent of some £70 to £120 per annum, plus their pensions, etc.

Thus the anomalous feature obtains of a junior leaving one week-end at the rate of 30s., and returning the following week at £4, plus "extras," to do the same work for the same employer, and all by the magic wand of the Civil Service Commissioners! *Ipso facto*, he was either underpaid before, or overpaid after.

But the "Architectural Assistant" class look to their First Commissioner for justice when placing them upon the Established list by considering this past injustice, and their long professional service with wholly inadequate pay, as deserving of an increase, rather than a sacrifice, of their incomes.

ARCHITECT.

R.I.B.A. PRIZES AND STUDENTSHIPS, 1912.

The designs and drawings submitted for the Institute prizes and studentships are now on exhibition in the R.I.B.A. Galleries (9, Conduit Street, W.). The chief results were announced in last week's issue, p. 85. The official list of awards is now given:—

THE ROYAL INSTITUTE SILVER MEDALS.

(i.) *The Essay Medal and Twenty-five Guineas.*

Twelve essays on "The Principles to be observed in Designing and Laying out Towns, treated from the Architectural Standpoint," were received for the Silver medal. The Council have awarded the medal and twenty-five guineas to the author of the essay submitted under the motto "Redundancy" [T. Harold Hughes].

(ii.) *The Measured Drawings Medal and £10 10s.*

Five sets of drawings were sent in. The Council award the medal and ten guineas to the author of the drawings submitted under the motto "Zeta" by Arthur Edwin Maxwell, who submitted six strainers showing Compton Wynyates; and certificates of hon. mention to the authors of the drawings submitted under the mottoes "Shopeinshouedes" by A. B. Allen (five strainers showing the Octagon, Ely Cathedral), and Walter M. Keesey (six strainers, Church of Santo Spirito, Florence).

THE TRAVELLING STUDENTSHIPS.

(i.) *The Soane Medallion and £100.*

Thirteen designs for a Guildhall were submitted. The Council regret that they are unable to award the Soane Medallion, but they award a certificate of hon. mention and the sum of fifty pounds each to the authors of the designs bearing the mottoes "Circle City" [William Friskin] and "Antæ" [Piet de Jong], on the condition that the authors make a three months' tour on the Continent in accordance with the conditions attached to the prize. They also award certificates of

hon. mention to the authors of the designs bearing the device and motto respectively of "Sailing Ship" [C. A. Harding] and "Vista" [Bertram Lisle].

(ii.) *The Owen Jones Studentship and £100.*

Two applications and drawings were received. The Council have awarded the certificate and (subject to the specified conditions) the sum of one hundred pounds to Mr. Noel H. Leaver.

(iii.) *The Pugin Studentship and £40.*

Nine applications were received for the Pugin Studentship. The Council have awarded the medal and (subject to the specified conditions) the sum of forty pounds to Mr. James Macgregor, and certificates of hon. mention to the following, who are bracketed as equal:—Mr. C. Peake Anderson, Mr. W. J. P. Jones, Mr. J. R. Leathart, and Mr. R. Norman Mackellar.

(iv.) *The Godwin Medal and £65.*

Two applications were received for the Godwin Bursary. The Council have awarded the medal and (subject to the specified conditions) the sum of sixty-five pounds to Mr. Geoffrey Lucas.

(v.) *The Tite Certificate and £30.*

Eleven designs for the Central Court-yard of a Royal Exchange covered with a roof were submitted. The Council have awarded the Tite certificate and (subject to the specified conditions) £30 to the author of the design bearing the device "Red Lion" [Louis de Soissons], and a certificate of hon. mention to the author of the design bearing the motto "The Circle" [Thomas H. Chalkley].

THE ARTHUR CATES PRIZE: FORTY GUINEAS.

Three applications were received for the Arthur Cates Prize. The Council have awarded the prize to Mr. James Bertie Francis Cowper.

PRIZES FOR DESIGN AND CONSTRUCTION.

The Grissell Gold Medal and £10 10s.

Four designs for an Isolated Exhibition Building were submitted. The Council have awarded the medal and ten guineas to the author of the design bearing the motto "M.C.M.XII" [Thomas Braddock].

THE ASHPITEL PRIZE 1911.

The Council have, on the recommendation of the Board of Architectural Education, awarded the Ashpitol Prize (which is a prize of books, value £10, awarded to the candidate who has most highly distinguished himself amongst the candidates in the final examinations of the year) to Mr. Philip Dalton Hepworth, Probationer 1907, Student 1910, who passed the final examination, November, 1911.

THE TRAVELLING STUDENTS' WORK.

Pugin Student 1911.—The Council have approved the drawings executed by Mr. James Bertie Francis Cowper, Pugin Student 1911, who travelled in Northamptonshire, Rutlandshire, Lincolnshire, and part of Norfolk.

Panels in the Royal Exchange.

Offers have been made to the Gresham Committee to fill two of the vacant panels in the Royal Exchange with frescoes or paintings depicting subjects connected with the Coronation and with the opening of the Australian Commonwealth Parliament. For the moment the gifts have not been accepted, probably because it has been felt that the inclusion of these modern and extraneous subjects would destroy or disturb the chronological sequence of the scheme for filling the panels. Possibly, as in a previous instance, the offer may be transferred to the Guildhall Art Gallery.

NEWS ITEMS.

M. Daumet's Bequest.

The late M. Daumet has left by will to the Académie des Beaux-Arts an annuity of 4,500 francs, to be applied in augmenting the pensions of aged architects.

Professional Announcement.

Mr. H. Bedford Tylor, for 16 years architect and surveyor on the Bournville Estate, is now in practice on his own account at 20, Linden Road, Bournville, and c.o. Messrs. Mayhew and Darling, solicitors, 38, Waterloo Street, Birmingham.

Parish Church, Carrington.

Twelve architects were selected to compete in the competition for the proposed new church of St. John the Evangelist, Carrington, Notts, which is estimated to cost £9,000. The assessor is Mr. Edward S. Prior, F.S.A., F.R.I.B.A., and the date for sending in designs was January 22nd.

Sheffield's King Edward Memorial.

Fitzalan Square is to be the site for the King Edward VII. statue which, together with the cripples' home, will be Sheffield's memorial to the late King Edward. The report on which the decision was based was prepared by Mr. Alfred Drury (the sculptor), Mr. W. J. Hale (architect), and Mr. F. E. P. Edwards (the city architect).

New Street Station, Birmingham.

The London and North-Western Railway Company is about to expend upwards of £100,000 on improvements at New Street Station, Birmingham. It is more than twenty years since the latest extension of the station took place. The alterations will result in a much loftier and more imposing facade to the station. The lighting is to be done on one side by high-pressure gas and on the other by electricity.

Largs Battle Memorial.

The committee of subscribers to the fund for erecting a memorial of the battle of Largs have chosen the design submitted by Mr. J. S. Kay, architect, Wellington Street, Glasgow. It was arranged that the architect should be communicated with in regard to details, the committee desiring that the memorial may be as nearly as possible assimilated to the ancient round towers of Abernethy or Brechin. A sum of about £318 is available for the erection of the memorial.

Two New Town Planning Schemes.

The Local Government Board have given authority for the preparation of two further town-planning schemes under the Housing, Town Planning, etc., Act, 1909. The schemes are to be prepared by the Corporation of Liverpool and the Urban District Council of Hanwell. In the case of Liverpool the scheme is to apply to about 88 acres of land, comprising Oakhill Park and land adjoining thereto, situate near the eastern boundary of the city. In the case of Hanwell the scheme is to extend to an area of about 198 acres.

Business Change.

Notice is given that the partnership previously subsisting between Mr. James

Taylor Duthie and Mr. Frederick Dobson, carrying on business as joiners and builders at 14 to 24, Cornus Street, Liverpool, under the style of "Duthie and Dobson," has been dissolved by mutual consent as and from January 13th, 1912. All debts due to and owing by the said late firm will be received and paid by James Taylor Duthie, who will continue to carry on the business in the name of "J. Duthie and Son."

Ventilation and Warming Installations.

The Church of England Schools, Padicham, are being ventilated by means of Shorland's patent exhaust roof ventilators and special inlet ventilators, supplied by Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester.

The Dutton Isolation Hospital, near Warrington, is being supplied with Shorland's double-fronted patent Manchester stoves and Manchester grates.

Christian Science Church, Edinburgh.

The new church which has been erected in Inverleith Terrace by the Edinburgh Christian Scientists, and which was recently dedicated, is stated to have cost about £11,200. It is designed in the manner of the late mediæval buildings of Scotland, and is seated for 636 persons, including 118 in the gallery. Mr. Ramsay Traquair, Edinburgh, was the architect.

Small Greenhouses.

A recent addition to the admirable series of "One and All Garden Books," edited by Mr. Edward Owen Greening, F.R.H.S., is on "Small Greenhouses," by T. W. Sanders, F.L.S. (price one penny, London Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C.). It bears out the claim for it in the editor's foreword that it is "clear, practical, and comprehensive." The author advocates the abandonment of formalism in the greenhouse as in the garden, and the introduction of "natural and truly artistic effects." Various forms of greenhouses are illustrated, and heating apparatus receives special attention.

Dearer Coal—Cheaper Gas.

The announcement that, coincident with a serious rise in the price of coal, the price of gas has again been reduced 1d. per 1,000 cu. ft. by the Gas Light and Coke Company, comes as a pleasant surprise. This reduction—following upon a similar lowering of price each January for four successive years—brings the charge down to the even half-crown. With the knowledge that gas is down to 2s. 6d. per 1,000 cubic feet, and that the Gas Light and Coke Company hold good stocks of coal, the consumers in their district can regard the coal merchants' announcements of higher prices and the prospect of a temporary stoppage in coal supplies with a decidedly easier mind than before.

Extensive Steel Roofing.

For a large new garage that is to be erected in West London, Messrs. Peirson and Co., of 17 and 18, St. Dunstan's Hill, Great Tower Street, E.C., have received an order for steel roofing to cover an area of about two acres. This roofing is constructed on a new principle, giving large clear spans uninterrupted by interior

supports of any kind; and the system is said to admit of exceptionally light and cheap construction. We understand that the whole order will be fulfilled within the short period of thirteen weeks, and that Messrs. Peirson and Co. will be glad to furnish architects with particulars and designs for any similar work.

Glasgow Technical College.

At a meeting of the Technical College Architectural Craftsmen's Society, Glasgow, on January 20th, Mr. James S. Boyd in the chair, a lecture was given by Mr. James McKissack on "Rothenburg-on-the-Tauber and other Bavarian Towns." The lecturer gave a general description of Bavaria, and described the situations and methods of reaching the various towns. A great number of excellent slides were shown, proving the claim of Rothenburg to be called a "city of dreams and fairy hills," rich in architectural and historic associations. The lecturer also gave a short description of other interesting towns, including Harburg, Dinkelsbüll, etc.

Carlton Hotel Improvements.


The fire which attacked the Carlton Hotel last August, when all but 21 out of 300 rooms were damaged by water, has, in the result, given the management the opportunity to introduce various improvements at a cost of £100,000. Wood has been abolished from the hotel wherever possible, and this change is most notable in the staircase built of white and grey-green marble from the Mitylene quarries. The suites of rooms have been fitted with sound-proof doors, ensuring absolute quiet, and more than half of them have been provided with private bathrooms. The bedrooms are provided with telephones and steam-heating apparatus. The newest feature is a system of coloured lights for summoning different servants. These lights are reproduced at each junction of the corridors, and again in a central office where they are noted by an attendant, who calls attention to the fact if the call is not answered within a reasonable time. This apparatus, which is said to be the first of its kind installed in England, has 80 miles of wire and 10,000 connections.

Haslemere Garden Suburb.

A start will shortly be made on the building of a first batch of cottages in the Haslemere Garden Suburb, a scheme which is being carried out by the Haslemere Tenants, Limited, the chairman of which is Mr. Aneurin Williams. In all nearly 60 houses will be erected, and the first 21 will be of three types, costing £140, £165 and £220 each. The £140 cottages will consist of a living-room and scullery on the ground floor and two bedrooms up stairs. These are intended especially for people who do not want a large house—old people and couples without families—a class which the promoters consider frequently forgotten in schemes for ideal cottages. The houses at £165 will have three bedrooms, and those at £220 will have the addition of a parlour and a bathroom. On the completion of 20 cottages the company will arrange for the building of the other portion of the suburb. As the houses will have good-sized gardens the tenders are lower than was originally expected, with the result that the rent will be lower than was anticipated.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

 A second edition has just been issued of the *Concrete Manual*. Very useful volume on "The Everyday Uses of Portland Cement," published by the Associated Portland Cement Manufacturers (1900), Ltd., at Portland House, Lloyd's Avenue, E.C., price 1s. 6d. net or 2s. 6d. net, according to the binding. Of the first edition, which was issued some three years ago, it was possible to say that it was a comprehensive *vademecum* for the cement user; and this praise may be repeated with emphasis for the new edition, which has been subjected to thorough revision, with the addition of much new matter, including a glossary of technical terms and an index. The very important subject of reinforced concrete is dealt with at considerable length, some thirty or more pages giving all the details that are likely to be required by any one who is not a trained expert in this system of construction, while even the specialist will be glad to avail himself of so admirably succinct a summary of principles and practice.

A Fundamental Principle.

The clearness of ex- position that distinguishes the volume throughout is well exemplified in this explanation of the fundamental principle of reinforced concrete construction: "The fundamental principle underlying the various applications of reinforced concrete is, that whereas steel is extremely strong in tension, concrete is strong in compression but comparatively weak in tension. That is to say, concrete will resist an enormous crushing load, but it is brittle and will break across if loaded as a beam. Comparatively, concrete is cheap, whereas steel is dear, and is moreover subject to corrosion if it be unprotected. However, it has been found that the two materials can be used in combination to their mutual benefit and with great economy." The old familiar data could hardly have been more tersely or more clearly stated, and the passage is characteristic of the lucidity observable in marked degree throughout the volume. Folding diagrams for calculating slabs and beams are included, and the methods of calculation are fully illustrated both by diagrams and by means of formulae. No more successful attempt to initiate the beginner into the not very recondite mysteries of reinforced concrete construction has ever come under our notice, and upon that account alone the book would be valuable.

The General Utility of Portland Cement.

It has many other claims to attention. Portland cement, its physical properties, its manufacture, and its innumerable applications, are described or indicated in more or less detail. The tools, machinery, and accessories employed in applying it are fully illustrated, and there are a dozen photographic representations of the various surfaces produced by different mixtures of concrete. Finally, in the "examples of the uses of concrete," common and uncommon, there is a long

and an exceptionally interesting list of structures of extraordinarily miscellaneous description; the inference being that almost anything can be satisfactorily constructed of that universally applicable material. It is, therefore, the less surprising to be told, on the authority of this interesting and valuable manual, that the world's annual output of Portland cement may be estimated at more than twenty million tons.

"Artistic Treatment" Again.

As Professor Beresford Pite's paper on "The Artistic Treatment of Concrete" was read at the summer meeting of the Concrete Institute, and as the adjourned discussion on it is yet to be resumed, there can be no complaint that the matter is being hustled, or that members have not been given time to turn the subject over in their minds. Some, indeed, will probably regret that they have had time enough to forget all about it. Nevertheless, it is to be hoped that architects, in particular, are giving the matter its due share of attention, and that on the resumption of the discussion they will be present in full force to give expression to their views on what is no doubt an eminently debatable subject. It is, indeed, a subject on which most of us are keeping an open mind, and, truth to tell, are not over-anxious for conviction either one way or another. No matter, therefore, to which side, if any, the balance of opinion in this discussion may happen to lean, there will always be those who, on the one hand, hanker after decorative effect in every material, and in all its adaptations, and those who, on the other hand, stand out for austere simplicity; and the greater or less degree of success of either of these parties of extremists will depend on the extent to which they can capture the neutrals, and thus neutralise each other's excesses. It is probably the midway men who will control and give character to the current or established practice that will ultimately emerge from the ordeal of controversy and experiment.

Extremists and the Medium.

Those who moderate on the uncompromising views of the extremists, and who see no reason should not be redeemed from absolute baldness, and, again, deprecate the equally undesirability of excess of ornamentation, are making a careful study of the possibilities of the material. Many articles and a few books have resulted from their enquiries and their essays in practice. An interesting and a suggestive book on the subject is "Ornamental Cement Work," by Mr. Oliver Wheatley, which has just been issued, price 5s., by Messrs. Scott, Greenwood and Son, of 8, Broadway, Ludgate Hill, E.C. Mr. Wheatley makes out a very good case for the decorative treatment of Portland cement. He claims that it affords the artist facilities that are only, if at all, inferior to those offered by canvas or paper, and superior to modelling in clay or wax, because these

are only preliminary processes, whereas the modelling of concrete is final and permanent, thus giving free play to the personality of the artist, allowing him unequalled opportunities for directly impressing his individuality on the work. This very facility is no doubt in a sense prejudicial to acceptance of the work. The average beholder, at any rate, who thinks anything about it at all, does not like to feel that the artist has had a very soft job, but, on the contrary, likes to admire the manner in which difficulties have been overcome, as when, as Virgil sings, "Others shall mould the brass with livelier grace, and from the marble draw the living face." But probably the average beholder satisfies himself with the effect, and never troubles himself in the least as to how it was obtained, nor even as to whether the material is cement or stone, or whether the ornamentation has been modelled, moulded, or chiselled.

Art and the Cement Worker.

He it is, however, this average sensual man, who, hating austerity, demands decorative treatment independently of the material used; and the crucial question is whether this demand can be legitimately met in the case of reinforced concrete buildings. This, however, is rather beyond the scope of Mr. Wheatley's book, which deals mainly with the ways and means of producing in cement "daintily detailed doorways, gateposts, balustrades, name tablets, garden pedestals and vases, fountains and rock gardens, basins in conservatories for gold-fish, and many other pleasing objects." Much of the ornamentation shown in the book is nevertheless adaptable to larger and more purely constructive work, to which, with here and there some slight modification, the methods of production are applicable. The author realises that "cement work must be pursued as an art. . . . To obtain the best results, the cement worker must be a person of education and ample means of reference to historic art. His work must reflect judgment and taste, which only come of training and experience. Unless this is so the very facilities of this material render it a danger for abuse." In another place he suggests that "we may take a doorway in the purest style of Classic, Renaissance, or Gothic art, and faithfully produce it with all the interest of carved stone. Or we may break new ground. . . . It may be mere prejudice, but we cannot bring ourselves to admit that "all the interest of carved stone" is possible in cement, which, consequently, as Mr. Wheatley elsewhere admits, requires special treatment in conformity with its special characteristics. The close imitation of stonework is therefore to be deprecated. If this were not so, there would be no problem to solve. As it is, we have still to find out the decorative capabilities of cement, and the best and truest methods of developing them. Mr. Wheatley's book, however, though it may not throw very much light on the aesthetic treatment of buildings, is strong both on the technical and on the artistic side, the instructions being practical and sufficient, while the advice as to

the choice and arrangement of ornaments is on the whole sound and judicious. As a guide to the minor operations already enumerated—the production of garden ornaments, and so forth—it should be invaluable. There are eighty-one well-chosen illustrations dispersed throughout the book.

STEEL-FRAME FACTORY, WITTON, BIRMINGHAM

This factory at Witton, Birmingham, covers an area of 47,000 superficial feet, and, while being an example of the simplest and cheapest possible form of steel-frame structure, is yet designed of efficient strength, with the usual safety margins, to carry floor loads of 2 cwt. per foot super.

This design permits of walls of a maximum thickness of 9 in. being used, thus economising space and reducing the brickwork cost to the lowest possible point. Nevertheless, all joints and connections are carefully designed to sustain their respective loads, and at the same time resist any unequal stresses due to wind effect, or any slight disturbance of foundations.

The steel stanchions, which are spaced at about 13 ft. 6 in. centres, are throughout made up of joist sections with rolled flats riveted on their flanges, and resting directly upon the concrete foundations; the bases being of sufficient size to spread the load, thus saving the cost of stone bases or grillages.

The main girders are also built up of joist sections with flange plates as required, and the bars for reinforcement

of the concrete floors are of a small joist section.

The aggregate for the concrete was 3 parts of good hard furnace clinker, 1 part of sharp sand, to one of Portland cement, the Associated Portland Cement Co.'s Ferrocrete brand. No treatment is required on the soffits of the floors, care being taken to secure a fair surface ready for distemping.

The whole of the steel stanchions and girders, where not embedded in the floors, are encased with 2 in. thick of fire-resisting Gypo non-conducting cement, finished right off with a perfectly smooth surface.

None of the floors exceeded 6 in. thickness, and owing to the care in the selection of the aggregate, no expansion or contraction has been recorded.

The accompanying illustrations show a scheme including large factory and warehouse blocks. The larger, of four storeys, is devoted to the warehouses, packing and carding rooms, and the smaller block of three storeys comprises the manufactory in which stamping, gilding, and finishing processes are carried out.

The keynote adopted in designing the whole scheme is the erection of a steel skeleton with an outer casing of brickwork merely employed as a facing.

It will be noticed from the plan that all the floors are carried on one row of stanchions in each block, thereby giving the maximum amount of floor space.

The whole of the outside stanchions are encased by a 4½ in. skin of brickwork, and the intervening space is filled in with fine concrete, thus making a pier of 1 ft. 10½ in. by 1 ft. 6 in., 9 in. walls being bonded in up the sill level of the windows. It will be seen that by this form of construction the minimum of pier is used,

thereby giving the maximum of window area. It is believed that this is the only four-storey building in the country with 9 in. brick walls for the full height.

The warehouse block is 120 ft. by 46 ft. and the factory 140 ft. by 60 ft., thus giving a total floor area for the works of over 47,000 sq. ft.; the height of each department from floor to ceiling is 10 ft. 6 in.

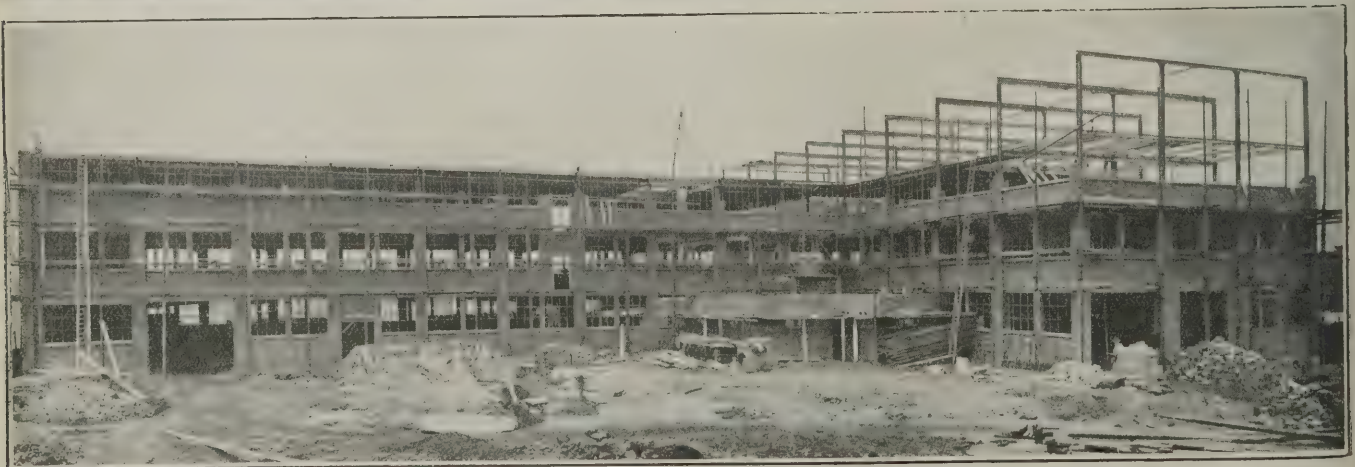
In some parts of the building wooden floors were necessary, so 3 in. by 2 in. joists on the splay were bedded into the concrete, and to these 4½ in. floor boards, 1½ in. thick, were spiked. These floors are absolutely sound-proof. The remainder of the concrete floors are covered with 2 in. of granolithic.

An electric lift connects the two blocks, also serving the mezzanine floor, comprising two private offices, the windows of which are so arranged as to command views of four floors; and being placed in the centre of the works give perfect supervision.

The whole of the steelwork has been designed sufficiently strong enough to admit of an extra storey being built at any time, without any addition to the existing steelwork.

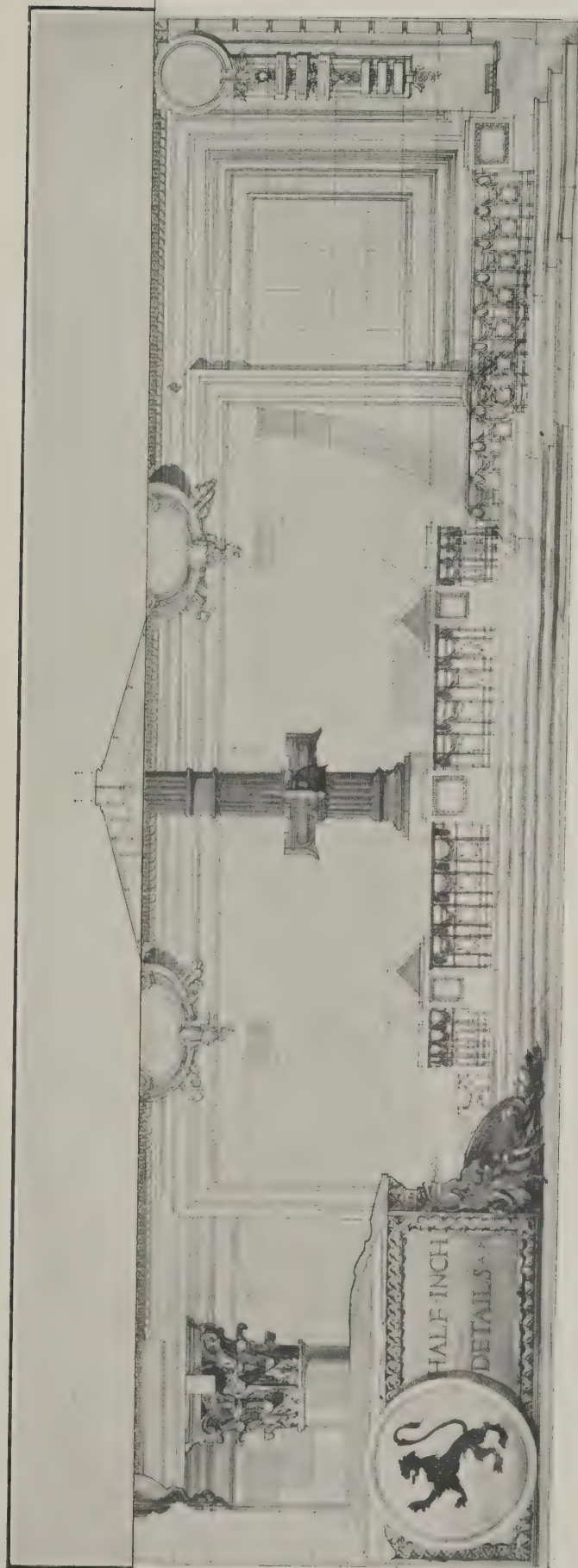
The architect is Mr. Burkett J. Emery, of Birmingham and London. The roofs are concrete flats covered with two layers of Lithenite, supplied and laid by Messrs Engert and Rolte, Ltd., of London. The steelwork, 300 tons, and concrete floors were carried out by Messrs. A. D. Dawnay and Sons, Ltd., of London and Cardiff. The whole building only took seven months to complete. The building contractors were Messrs. W. B. and H. Archer, of Handsworth, Birmingham.

The cost of the building worked out at the low price of under 3d. per ft. cube, lift and heating system being included.

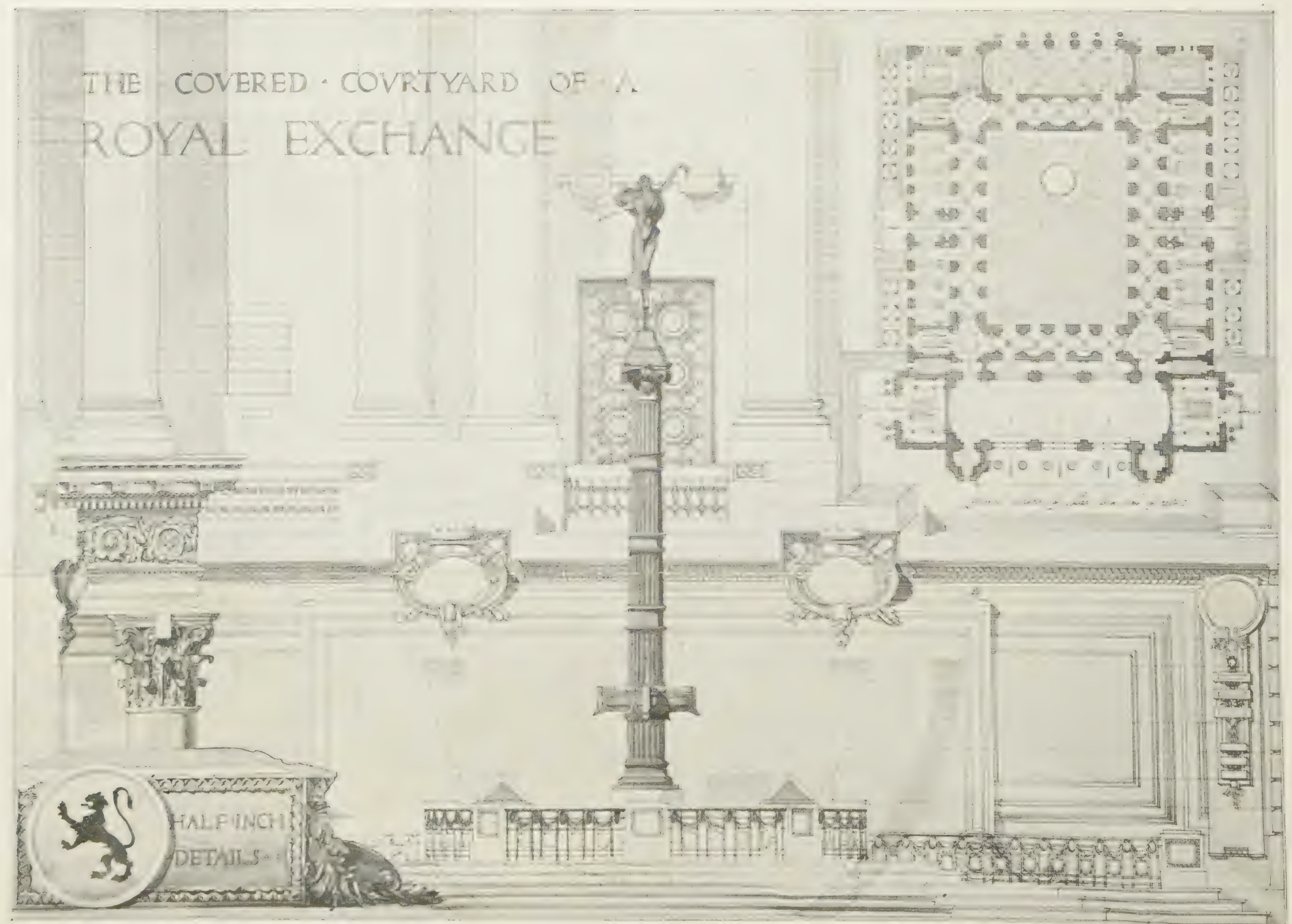
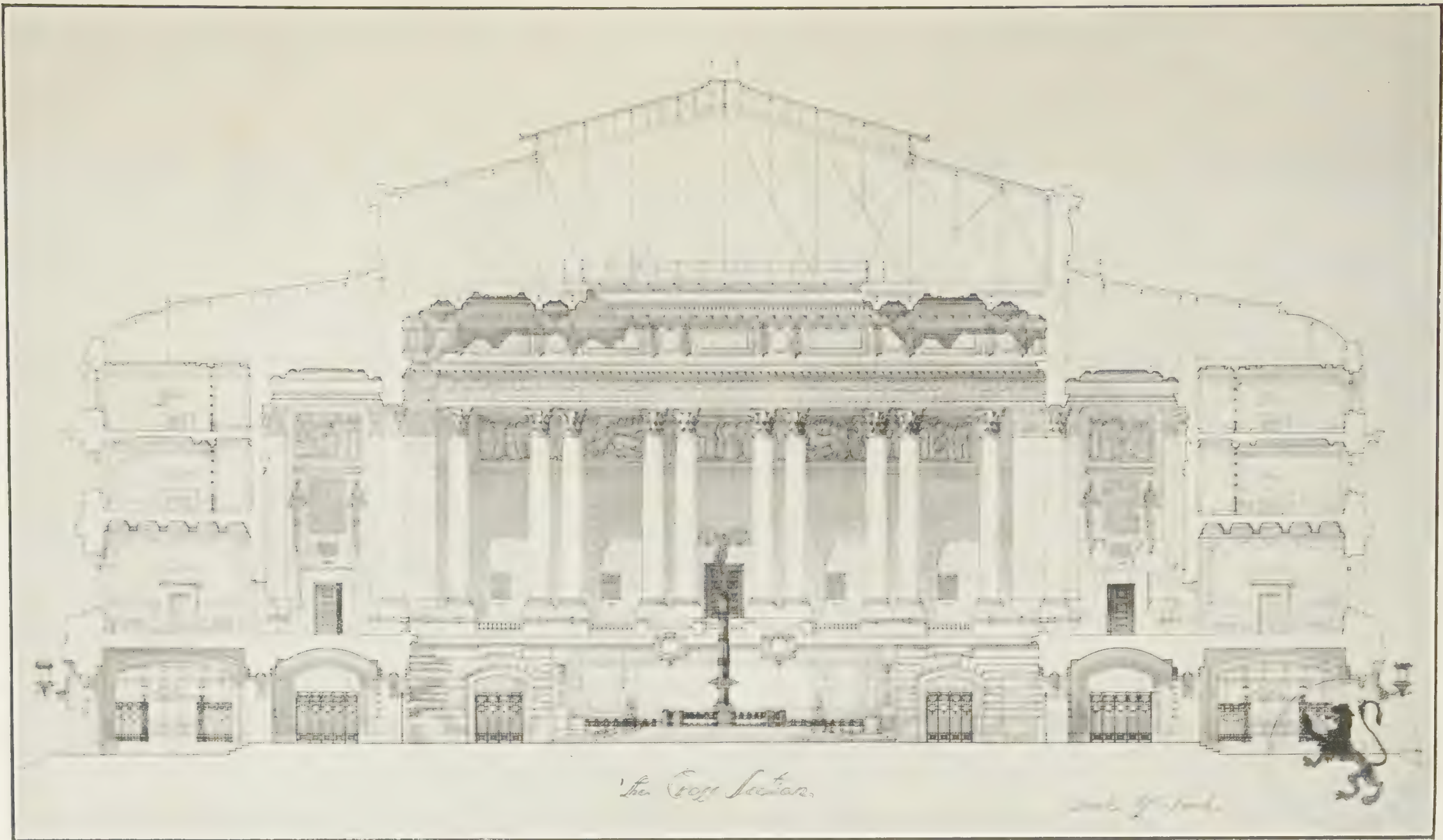


WAREHOUSE AND FACTORY AT WITTON, BIRMINGHAM, IN COURSE OF ERECTION.
BURKETT J. EMERY ARCHITECT

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, January 31st, 1912.



TITE PRIZE DESIGN. BY LOUIS DE SOISSONS.



TITE PRIZE DESIGN. BY LOUIS DE SOISSONS.



GENERAL VIEW OF FACTORY.

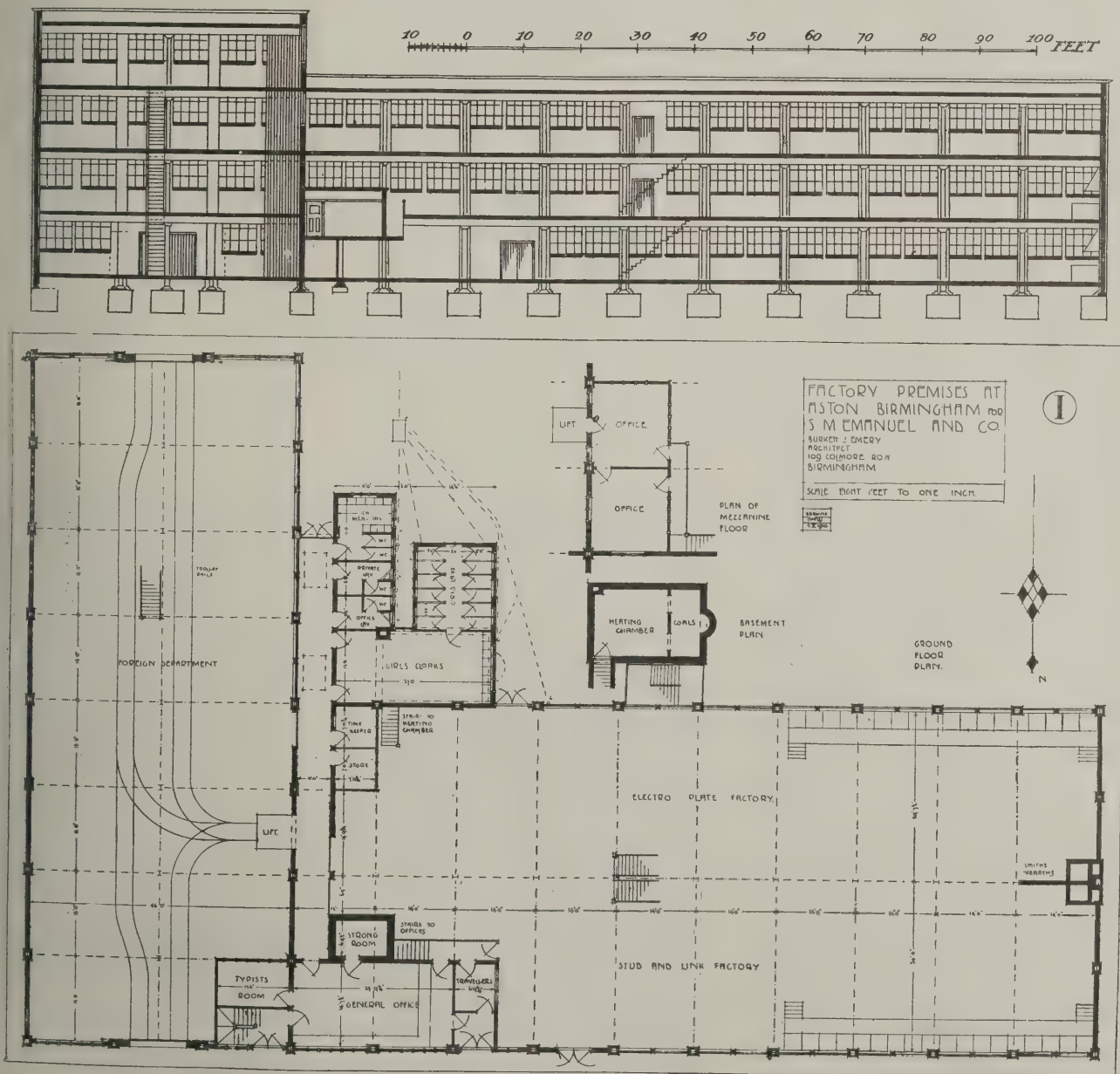
THE CONSISTENCY OF CONCRETE.

An interim report of the Reinforced Concrete Practice Standing Committee of the Concrete Institute, relating to the consistency of concrete, has been drawn up, and was presented at the twenty-second ordinary general meeting of the Institute.

A circular letter of inquiry on the subject had been addressed to the members, in which it was suggested that a specification as drafted would be of service, pending experiments and tests that ought to be made to determine the exact proportion of water to be used in concrete in order to obtain the best mixture. This specification, as now slightly modified by the Committee, is as follows:—

Consistency of Concrete.—For mass concrete the quantity of water added to the other constituents shall be sufficient to make a plastic mixture which, after thorough ramming, will quiver like a jelly.

For reinforced concrete the quantity of water added to the other constituents shall be such that the plastic mixture is capable of being rammed into all parts of the moulds and between the bars of the reinforcement.





FACTORY AT WITTON, BIRMINGHAM: VIEW OF COMPLETED BUILDING FROM THE REAR.
BURKETT J. EMERY, ARCHITECT.

STRESSES IN REINFORCED CONCRETE COLUMNS.

Note.—In dry or hot weather the quantity of water shall be increased in order to allow for evaporation.

Fifty-eight replies were received, and they were carefully considered by the Reinforced Concrete Practice Standing Committee, who have come to the following conclusions:—

(1) It is inadvisable to lay down any definite rule as to the percentage of water to be used in mixing concrete, owing to the varying conditions which obtain. The proposed specification is difficult to improve upon, and seems to meet with general agreement.

(2) The strength of concrete apart from any reinforcement increases as the amount of water used in mixing is decreased, this being more particularly the case during the earlier stages of the maturing of the concrete. Eventually the wetter of two mixtures will approach more nearly to the drier in strength.

(3) In reinforced concrete, particularly in such portions as may contain a large amount of reinforcing bars or the like placed closely together, it is essential that the concrete should be sufficiently wet to pass between the reinforcing bars, and to surround thoroughly every portion of the steel. This should be ensured even at the expense of having the concrete wetter than would otherwise be desirable.

Where the reinforcement is not very closely spaced it is unnecessary for the concrete to be so wet.

(4) Other conditions being the same, the drier the concrete the more quickly will it set and mature. This is of importance when there is any danger of green concrete being attacked by frost.

(5) The wetter the concrete the greater is the tendency to contract during the process of setting and maturing. Appreciable contraction may sometimes continue for a period of several years.

(6) The Committee is divided as to the advisability of determining by some means of mechanical test the exact degree of "wetness" or consistency of concrete after mixing. If some scale of consistency were adopted, it would be possible to specify that concrete for any particular portion of the work should be of such and such a consistency, after mixing. This would not, of course be at all the same as specifying that any particular amount of water should be used in mixing such concrete, owing to differences of atmospheric temperature, aggregate, etc.

The advocates of the institution of some such scale of consistency are of opinion that the Concrete Institute should carry out tests on the subject.

In carrying out the experiments described in his paper on "The Direct Experimental Determination of the Stresses in the Steel and in the Concrete of Reinforced-Concrete Columns," which was read before the Institution of Civil Engineers, Mr. W. C. Popplewell, Associate, sought for a satisfactory method of measuring the shortening of the steel bars and the simultaneous shortening of the adjacent concrete under the loads applied to reinforced columns. From these measurements, if they were reliable, he thought it would be possible to calculate the stresses in the steel and concrete, when the elastic moduli for the two materials were known. It was also thought that measurements made in this way would be the means of revealing any movement of the steel relatively to the concrete. The main experiments were carried out on five columns 6 in. square, each reinforced by four round-steel bars $\frac{3}{4}$ in. diameter. Loads were applied in a testing-machine, and corresponding shortenings of the steel and concrete were measured by means of Martens extenso-

meters. For the steel these were applied to the ends of pairs of pins projecting from the reinforcing bars through holes in the concrete, and for the concrete they were applied to the surface as near as possible to the steel. From the results of the experiments, four pairs of curves were plotted for each column, one pair for each of the bars. These curves are given in full detail in the paper, and their peculiarities are discussed.

Besides the main experiments, others were carried out to compare the effect of loading when the load was uniformly distributed over the end of the column and when it was applied in the centre. This enabled a comparison to be made between the effect of having the load transmitted directly to the ends of the bars, and having it communicated to the bars through the holding grip of the concrete. The result showed practically no difference. The experiments to find out the value of the modulus for the steel and the concrete yielded values respectively of 30,200,000 and 1,535,000 lbs. per square inch.

A further set of experiments carried out to determine the intensity of the frictional grip of the concrete on the steel resulted



FACTORY AT WITTON, BIRMINGHAM: INTERIOR VIEW.

in values ranging from 300 to 600 lb. per square inch of bar surface, to cause slipping. The stresses in the steel and concrete, calculated for a working-load of $13\frac{1}{2}$ tons which the columns were designed to carry, were found to be, respectively, 437 lb. and 8,650 lb. per square inch. This gives a load on each bar of 1.7 ton, and, comparing this with the load required to push one of the bars through the concrete, as found from the experiments on frictional grip, it is evident that from this point of view there could not have been any slipping of the steel in the concrete.

The author considers that the manner in which the strain measurements were made proved very satisfactory, and that the method might be extended to other cases. A careful inspection of the resultant plotted diagrams appears to show that, when all the effects of eccentric loading have been eliminated, there is no evidence to indicate that slipping took place; and it is evident that in columns of this kind made up with plain smooth bars the two materials behave like one so far as their strain effects are concerned.

COMPOSITE COLUMNS OF CONCRETE AND STEEL.

Mr. William Hubert Burr, M.Inst.C.E., in a paper read before the Institution of Civil Engineers, described a series of tests which he had made on the effect of a concrete filling on increasing the carrying-capacity of a steel column, a subject that had never been sufficiently investigated. The columns tested consisted first of two types of built-up columns of plain steel, and secondly of exactly similar steel members filled with concrete. The reinforced-concrete columns were filled with 1 : 2 : 4 concrete, and were tested at 3 months. The steelwork consisted in one case of four vertical steel angle-bars arranged as the four corners of a square and braced together with lattice bars to form a square column $6\frac{1}{2}$ in. in exterior dimensions, and in the second case of four vertical channels arranged with their flats forming four opposite sides of an octagon and wrapped at intervals with batten plates bent round in the form of an octagon $7\frac{1}{2}$ in. across the flats. Only the concrete lying within the exterior dimensions of the steelwork was included in the calculations. All the columns were 7 ft. long.

Four of each type were tested, two filled with concrete and two without concrete. The plain steel columns withstood an average total load of 67 tons on an area of 4 sq. in. in the case of the angle construction before failure; and 68 tons on an area of 4.76 sq. in. in the channel construction, which was not securely braced.

The addition of concrete increased the maximum loads before failure to an average of 98 tons on a total combined area of 42.25 sq. in. in the angle reinforcement, and to 96 tons and 112 tons respectively on an area of 49.75 sq. in. for the two channel-bar columns.

The modulus of elasticity of the steel being known, and the compression of each column under successive loadings being measured, the modulus of elasticity of the concrete and its corresponding stress can be calculated. In the case of the angle-bar columns, this modulus was 21,000 lb. per sq. in. at a stress of 60 lb. per sq. in., but decreased as the stress on the columns increased.

Finally, a description of the method of failure of the various columns was given; also curves showing the lateral deflection and main compression. The author concluded by suggesting that the tests would justify working stresses as high as 500 lb. to 750 lb. per sq. in. in columns of this nature, and possibly higher stresses for structures of unusual magnitude.

WORLD'S PRODUCTION OF IRON AND STEEL.

A return issued by the Board of Trade showing the output of iron ore, pig iron, steel, and manganese by the principal producing countries of the world states that the principal producers of iron ore and the outputs for 1908, 1909, and 1910, respectively, were: The United States, 35,925,000 tons, 51,155,000 tons, and 56,890,000 tons; Germany (including Luxembourg), 23,888,000, 25,095,000, and 28,248,000; United Kingdom, 15,031,000, 14,804,000, and 15,226,000; France, 9,895,000, 11,699,000, and 14,250,000; and Spain, 1908 and 1909 only, 9,123,000 and 8,645,000 tons. In regard to pig iron, the principal producing countries for the same years were: The United States, 15,936,000 tons, 25,795,000 tons, and 27,304,000 tons; Germany, 11,616,000, 12,442,000, and 14,556,000; the United Kingdom, 9,057,000, 9,532,000, and 10,012,000; and France, 3,346,000, 3,516,000, and 3,968,000. The total for 1910 is estimated at 65 million tons. The total output of steel for the same year is put at between 59 and 60 million tons, of which the United States, Germany, and the United Kingdom produced more than 46 millions. The actual figures for 1908, 1909, and 1910 are: The United States, 14,023,000, 23,955,000, and 26,095,000 tons; Germany, 11,006,000, 11,856,000 and 13,479,000; the United Kingdom 5,438,000, 6,018,000, and 6,515,000 tons. Manganese is produced mainly by British India and Russia. The figures for the former country are: 674,000, 643,000, and 801,000 tons, and for the latter, 1908 and 1909 only, they are 295,000 and 652,000 tons.

Change of Address.

In consequence of the increase in business, Messrs. D. G. Somerville and Co. have now removed to larger offices at 120, Victoria Street, Westminster, where all future communications should be addressed. The works address remains as heretofore—Archangel Wharf, New Cross, S.E.

Filling Holes in Concrete Walls.

Holes in concrete walls left by the tie rods of the forms have been filled by forcing corks into them and then ramming the holes with grout. A negro workman at one of the filter beds at New Orleans thoughtlessly jammed the cork of an empty bottle into one of the holes he was supposed to fill with grout. An engineer saw this and shortly afterward ordered enough corks to fill all the holes, which had previously given more or less trouble from leakage. Corks slightly larger than the holes were used and rammed to the centre of the wall with a rod having a collar several inches from the end and provided with a metal weight arranged so that it would slide along the rod and act as a hammer. The remainder of the hole was then readily grouted.

REINFORCED-CONCRETE WHARVES AND WAREHOUSES.*

By S. H. ELLIS, M.Inst.C.E.

This paper describes works recently constructed, under the author's supervision, beside the Whang-Poo River, near Shanghai, in North China. These comprise a reinforced-concrete piled wharf, 1,160 ft. long by 174 ft. wide, with a minimum depth of 21 ft. of water at its face; a reinforced-concrete quay-wall 495 ft. long and 21 ft. high; and two reinforced-concrete four-storey warehouses, each 300 ft. by 100 ft. in floor-area; as well as offices and staff-quarters, sheds for temporary storage of goods, and a power and light installation.

The question of foundations was dealt with at some length, the site consisting of river-deposited silt to an unexplored depth. The wharves and lighter buildings are founded on groups of reinforced-concrete piles. The warehouses rest on a raft of reinforced concrete (girders, beams, and foundation-slab), connecting the column-bases with a grill 4 ft. 6 in. to 5 ft. deep.

A brief account was given of the methods employed in driving the wharf-piles, of which over four thousand were used, and in the formation of the superstructure. The chief feature of the latter is that all members but the pile-caps, beams, and deck, were moulded on shore, and erected in place when matured.

The quay-wall is built along a tributary creek, and consists of a thin vertical wall and horizontal deck connected by buttresses, the whole founded upon piles. A slight forward movement of the structure was described, and the means adopted to ensure its stability.

The warehouses have reinforced-concrete floors supported on columns, the chief feature of which consists in the vertical bars being bound with a continuous rod wound spirally and enclosing an area of heavily stressed concrete. The interior first-floor columns are designed to carry a safe working-load of 376 tons each.

The nature and method of preparation of the concrete were briefly described, and the average records were given of three series of compression tests which were made (on the site) with 8 in. cubes of 1 : 2 : 4 mixture. These gave average results of 2,540 and 2,811 lb. per square inch at 3 months, and 4,137 lb. per square inch at one year.

The various methods of reinforcement employed were outlined, and the basis of calculation was stated. The points chiefly dwelt on were, first, the reinforcement of the lower columns in the warehouse; secondly, the general methods of ensuring that the steel skeletons were firmly bound together, with no loose pieces; and thirdly, the particular plan of effecting this in the wharf-girders, by employing a built-up reinforcement of angle and flat bars riveted together.

A description was given of tests to destruction which were carried out on a full-sized experimental wharf-beam, a warehouse-beam of corresponding character, and five experimental columns of reduced size; also of loading-tests applied to the warehouse first-floor columns.

* Abstract of a paper read before the Institution of Civil Engineers.

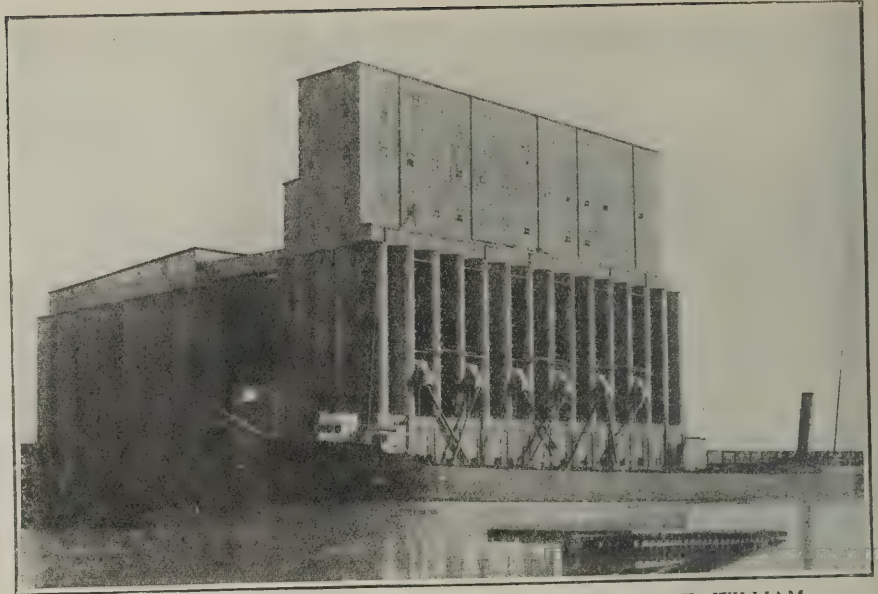
REINFORCED CONCRETE GRAIN ELEVATORS.

A Huge Plant.

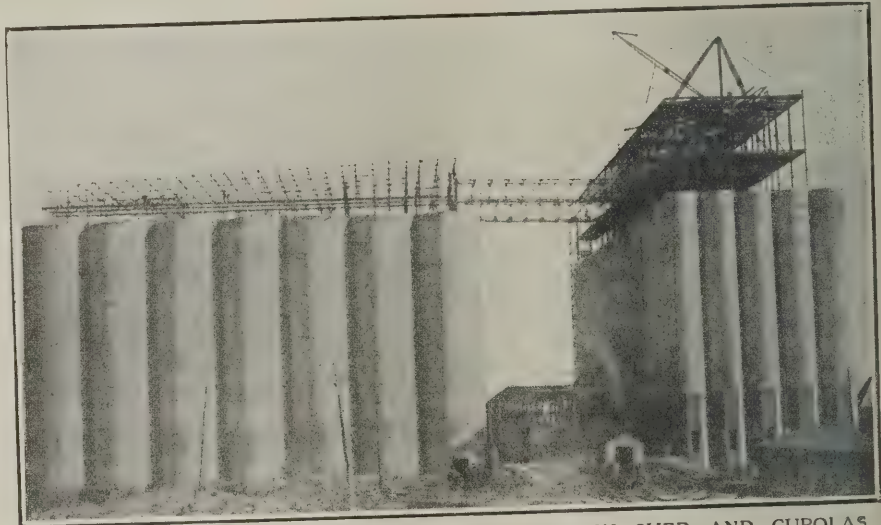
The accompanying illustrations show a huge reinforced concrete grain elevator at Fort William on the Grand Trunk Pacific Railway, U.S.A., said to be the largest of its kind in the world. It is designed in four units of 10,000,000 bushels each, the first section with a capacity of 3,500,000 bushels, having been completed last year. The object embodied in the scheme is to take advantage of lower freight rates on the great lakes, and to rush wheat in the "fall months" from the threshing machines through the country receiving houses to the terminal elevators or silos on Lake Superior, where it is loaded into lake vessels. For the prompt and efficient handling of the western crop unusual facilities are necessary at the head of the lakes.

The plant, which was designed by the Canadian Stewart Co., Ltd., consists of a working house with a capacity of 750,000 bushels, a storage annexe of 2,750,000 bushels capacity, a four-track receiving shed, a dryer house, a boiler house, a switchboard room and transformer house. In front of the working house a concrete dock 337 ft. long has been constructed for the accommodation of vessels receiving their cargoes of grain. The working house consists of 75 circular concrete bins, having an inside diameter of 12 ft. and rising to a height of 79 ft. They are arranged in five rows of 15 bins each, forming 56 interstice bins, and making the working house 69 ft. wide by 237 ft. long. These bins are supported by a series of octagonal columns forming a working storey 20 ft. high. Surmounting the bins is a structural steel cupola 83 ft. high, sheathed with corrugated steel and roofed with concrete.

The annexe consists of 70 circular concrete silos arranged in ten rows of seven each. They have an inside diameter of 23 ft. 3 in., and are 95 ft. high. Fifty-four interstice bins formed between the circular silos are also utilised for storage. The silos are supported on a concrete mattress and walls. The cupola over the annexe is of steel construction, and is roofed with concrete. Five overhead bridges connect the storage annexe with the working house, and provide passageway for the conveyors, while steel galleries and cross walks are built over the silos in the annexe with open areas between; thus making it possible to heap the grain above the top of the bins.



FIRST SECTION OF 40,000,000-BUSHEL ELEVATOR, FORT WILLIAM



COMPLETED SILOS AND STEEL FRAMES OF TRACK SHED AND CUPOLAS.

Between the working house and the storage annexe is the track shed, a steel-framed structure 68 ft. wide by 240 ft. long, having a concrete foundation and roof. It contains four tracks with pit and shovel accommodation for twenty cars, which may be unloaded at one time.

The preliminary work entailed by an undertaking of such magnitude as the construction of the Grand Trunk Pacific

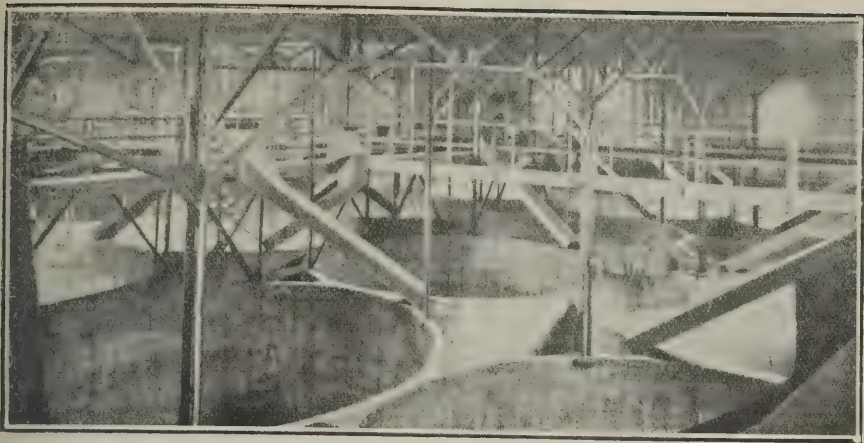
elevator may be realised when it is stated that fifteen men were employed at the Walkerville office of the contractors for many months, designing, drawing, and tracing, every little detail being drawn out before construction.

The actual work of construction began on November 21st, 1908, from which date excavation for foundations was vigorously pushed forward. Pile driving closely followed (the pilings consisting of 12,000 timbers 60 ft. long); and with the advent of spring, the site was ready for the concrete foundation proper.

The methods of handling and placing concrete in the foundation did not differ much from the general practice in such work, but it is noteworthy to remark the rapid progress made. While the first concrete was laid in March, the foundations were completed to the top of the bin supporting floor in May. During the time the foundation was being done, the circular silo forms were made, and when the bin supporting floor was laid, the silo forms were ready for placing. These forms, embodying the experience of years of concrete grain elevator construction, are an evolution from the crude methods formerly employed on circular bins. An absolutely smooth surface without break or unsightly rings and offsets is obtained by their use. The laying of concrete is practically continuous from the plac-



FOUNDATION AND SUBSTRUCTURE, GRAND TRUNK PACIFIC ELEVATOR, FORT WILLIAM, U.S.A.



CONVEYOR BELTS AND SPOUTS ABOVE BINS IN STORAGE ANNEXE.

of the bottom until the top of the silos reached. The forms in general consist of an inner and outer wall section 4 ft. high which are held apart by yokes, a sort of steel clothes pin made up of plates and channels and supported by lifting racks, an ingenious device patented by Messrs. W. R. Sinks and R. H. Folwell, of the Canadian Stewart Co., Ltd. The essential element of the invention is a hollow jack screw through which is inserted a vertical rod and upon which the jacks are made to climb and thereby raise the forms. In operating the jacks, a workman inserts a bar in a socket, causing a screw to turn. By turning to the right the forms are lifted, and by turning to the left the jack itself climbs the rod, while the forms remain stationary, being supported by the adjacent jacks. By reason of the rod passing through the jack the load is applied concentrically, and thus any tendency for the forms to bind is eliminated. Another great advantage of the device is that it does not have to be dismantled when a new length of rod is inserted. By this system the position of the horizontal reinforcing rods may be marked on the jacking rods, which is a matter of great convenience; also, daily progress of the work may be accurately observed, and the forms are kept level throughout the entire work by reference to the marks. The forms of the separate silos, though constructed in sections, are tied together by an arrangement of rods attached from yoke to yoke, making a united system

and providing an ample floor space for workmen. For each silo eight yokes and jacks were used, operated in sequence, one being turned a little at a time. The annexe walls were completed on August 15th. In the meantime the working-house bins were rising and the final concrete was placed on August 31st. Immediately upon the completion of the silos, the erection of the steel cupola framing was commenced. Fifteen hundred tons of steel was used in the construction. In December, 1909, the framing for the cupolas had been erected and enclosed and the floors and roofs were completed. All roofs are covered with five-ply composition pitch felt and gravel, while the window frames are of sheet metal glazed with $\frac{1}{4}$ in. wire-ribbed glass, and all doors steel-clad.

Portland cement arrived in Fort William in large cargoes, and it was necessary to provide ample warehouse facilities to hold it until wanted on the work. A cement shed capable of storing 12,000 barrels of cement was connected with the various cement mixing plants by means of railway tracks, sand and gravel for concrete were dredged from Lake Superior, and travelling hoppers received these materials from a whirley. The concrete mixing plant consisted of four No. 2½ Smith Mixers and Lidgerwood hoisting engines. Four hoist towers and hoppers were constructed and necessary track was laid early, so that when the work was ready for concreting to begin, the mixing plant was completely

installed. This plant handled during the course of construction 60,000 cubic yards of concrete, and its efficiency is evidenced by the fact that as much as 800 yards was mixed and placed in a single day.

For forms and moulds 2,000,000 ft. of pine lumber were used, while the steel bars for reinforcing amounted to 2,500 tons. Round bars were used in girders and floor slabs. Horizontal reinforcement in the concrete silos consisted of flat steel bands, spiral reinforcement being employed for the concrete columns supporting the working-house bins.

THE ARCHITECTURAL POSSIBILITIES OF STEEL.*

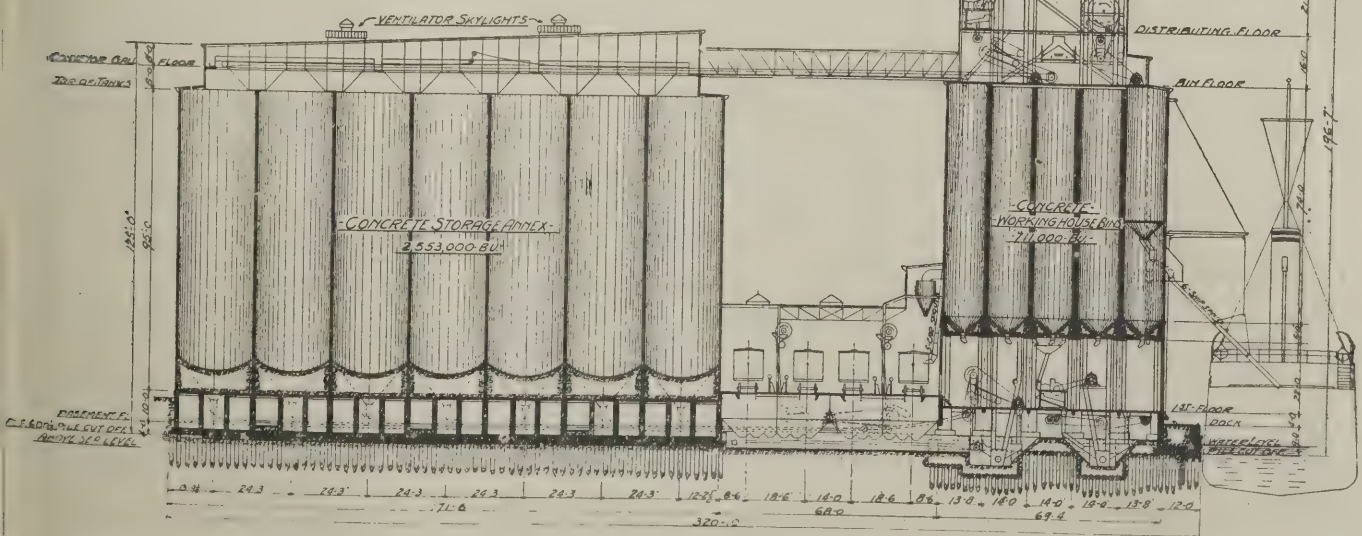
By HENRY C. CHARLEWOOD, F.R.I.B.A.

Earlier in 1911 a very interesting lecture was delivered by Sir William Richmond at the Armstrong College of Science entitled "Universities and Art Teaching," and I venture to call attention to some remarks of his on the subject of "the possibilities of steel as a material that will answer the æsthetic demands—i.e., what is beautiful plus what is useful, and per chance economical."

"In my opinion" (says Sir William), "and I give it for what it is worth, steel is a material which has in it somewhere and somehow great though different possibilities of beauty from those of wood and stone. Perhaps a new beauty, one to which she shall have to get accustomed, but which, and this I believe to be a certainty, will never be attained by imitation of construction or ornament which essentially belongs to other materials."

Sir William's theory is by no means a new one, but now that we find ourselves in an age of steel, it behoves architects to be always keeping their eyes open to

*Extracted from the Presidential Address delivered to the Northern Architectural Association, Newcastle-on-Tyne.



SECTION OF GRAND TRUNK PACIFIC SILOS, FORT WILLIAM.

its possibilities. At present we are very much afraid of letting it be seen, much more so than some of our Continental neighbours. We erect a steel building and then cover it with stone or some other material; but if a building could be designed in such a manner that we should be satisfied with the appearance of steel construction we should have a style which would be original and belong solely to the twentieth century.

The stone age has had its revival to a surprising extent, especially in some of the leading streets in London, and, though stone is by no means unsuitable for our large towns, it must be confessed that it does not meet with much originality of treatment. In the case of large buildings the classic orders are generally made use of in some form or other over and over again.

Though many leading men have taken up the question as to how steel buildings are to be made beautiful, I know of no really satisfactory solution of this difficult problem. A few years ago, an admirable design for a Gothic cathedral, with steel construction to be covered with lead, by one of our leading architects, was exhibited on the walls of the Royal Academy, and reproductions of it are familiar to most of us; but on looking at it one feels that though the construction is intended to be of steel, it could be carried out more suitably in stone. The wide buttresses with their weatherings and canopies are all suggestive of stone construction. What is wanted is an entirely new type of architecture suitable for visible steel construction, without any attempt at concealment. A great deal could be made of the treatment of very plain steelwork in coloured decoration, provided that there was no attempt to give to the metal the appearance of another material.

I do not venture on any suggestions as to the way in which steel buildings could be designed, but feel sure that, had the problem presented itself to some great nation like the ancient Greeks, they would have been equal to the occasion, and have overcome the apparently overwhelming difficulties in some very natural and simple manner. Perhaps the problem will be solved in some country where there are no examples of ancient architecture, and where architects will have their minds unbiassed by any early traditions.

There is one feature which is absent from all our modern towns, and which, no doubt, as matters now stand, would not come within the Corporation By-laws, but which I think is a decidedly attractive feature. I refer to the covered way. In my young days I was often in the town of Nottingham, and I have a very vivid recollection of the advantages of the covered way in what I believe is still known as the "Long Row." There you were independent of rain or snow, and seeing that rain is an element to be reckoned with in this country, that is a great consideration.

Covered ways could not now be carried out in England on the lines of those in Italian towns, where the exclusion of the sun is the chief requirement, and it is customary to bring the upper part of the buildings in the streets over the flagged footpaths, supported on rows of stone pillars either with or without arches, which give some very effective shadows underneath. These are very picturesque, but would not lend themselves to the requirements of modern tradesmen; but I think that covered ways could be designed of steel in a way which would not necessarily be a detriment to the general effect, and the light could be obtained by means

of prismatic glass where light was most required. I imagine the roofs to be flat and covered with lead for the most part, or possibly with some cheaper form of covering, but never lean-to roofs glazed after the manner of a greenhouse; vide catalogues of metal castings.

It would not be easy to apply them to our street buildings as they now stand without considerable detriment to their appearance; but, if buildings with visible steel construction became the order of the day, I think that covered ways would follow as being specially adapted to buildings of that nature; and I am quite sure that those towns which had covered ways would be very popular for shopping centres, owing to the gain in comfort insured thereby; and on the occasion of any great public function the flat roofs would be very useful as raised platforms from which a good view of processions in the streets could be obtained. Something in the nature of a covered way has lately been effected in Newcastle in front of the premises of a well-known firm of tradesmen in Market Street; and though it may be said to be of a purely utilitarian character, it has one great advantage, viz., that people can look at the goods displayed in the shop windows for as long as they like, without being in the way of pedestrians.

What I have said as to buildings of steel construction also applies to some extent to reinforced-concrete buildings. I should like to see the external surface of reinforced-concrete buildings treated decoratively with either mosaic work or tiles, which would give the impression of having been applied, whereas stone or brick give the wrong impression that they are constructional features. The building up of a projecting cornice in reinforced-concrete to look like a classic stone cornice cannot be said to have a particle of truth in its favour, and if we give up all attempts to be true in our construction very little can be hoped for the architecture of the twentieth century.

The imitations of the materials themselves are very much to be deplored. Stone and marble are imitated so closely that even a stonemason may be deceived at first sight; and cheap kinds of wood are scratched and stained to give the impression of oak.

Architecture which depends upon shams both in its materials and construction for its general effect will never seriously impress the minds of any thinking people.

YIELD POINT AND ELASTIC LIMIT.

BRITISH STANDARD DEFINITION.

The Engineering Standards Committee, supported by the Institutions of Civil Engineers, of Mechanical Engineers, and of Naval Architects, the Iron and Steel Institute, and the Institution of Electrical Engineers, have just issued the British Standard Definitions for Yield Point and Elastic Limit (Report No. 56), copies of which can be obtained from the offices of the Committee, 28, Victoria Street, Westminster. The full text is as follows:—

The main committee having been approached with the request that standard definitions for the terms "yield point" and "elastic limit" should be drawn up, remitted the matter to those sectional committees which had prepared standard specifications for steel and wrought iron, with the result that the following definitions have been unanimously agreed upon. At the request of the Ships Committee, a note is added with regard to the use of

these terms in the commercial testing of materials used in the construction of ships and their machinery.

Definitions.

Elastic Limit.—The Elastic Limit is the point at which the extensions cease to be proportional to the loads. In a stress-strain diagram plotted to a large scale it is the point where the diagram ceases to be a straight line and becomes curved.

Note.—The Elastic Limit can only be determined by the skilful use of very delicate instruments and by the measurement of the extensions for small successive increments of load. It is impossible to determine it in ordinary commercial testing.

Yield Point.—The Yield Point is the point where the extension of the bar increases without increase of load.

Practical Definition of Yield Point.—The Yield Point is the load per square inch at which a distinctly visible increase occurs in the distance between gauge points on the test piece, observed by using dividers or at which when the load is increased at moderately fast rate there is a distinct drop of the testing machine lever, as in hydraulic machines, of the gauge finger.

Note.—A Steel test piece at the Yield Point takes rapidly a large increase of extension amounting to more than 1/200th of the gauge length. The point is strongly marked in a stress-strain diagram.

Note added by request of the Ships Committee.—The Sectional Committee on Sections and Tests for Materials used in the construction of Ships and the machinery, while concurring in the foregoing definitions, desires however to make the following remarks with regard to the use of the terms "Yield Point" and "Elastic Limit" in connection with Steel and Wrought Iron for Shipbuilding.

The Ships Committee does not recommend the use of either "Yield Point" or "Elastic Limit" in the Standard Specifications for Ship Material for the following reasons:—

Yield Point.—In regard to the attainment of the Yield Point there is considerable divergence of opinion as to the best method of determining it, and methods involve greater time and cost than can be expected in the works. While it is possible in works by careful test at a greatly reduced speed to obtain the Yield Point in ordinary mild steel and wrought iron, some of the harder steels and other constructional materials have no defined Yield Point at all, and so have no Elastic Limit.

Elastic Limit.—It is quite impossible to determine the Elastic Limit in time available for ordinary commercial testing. In its determination a special delicate and accurate extensometer must be used, in the hands of a careful competent observer, and the determination for each test bar would require considerable time. It is properly a matter to be left to laboratories organized for scientific purposes.

The Ships Committee is of opinion that the present method of fixing, by experience, the working stress for material as a proportion of the ultimate breaking stress rather than as a proportion of the Elastic Limit or Yield Point, is the best practical method. It therefore considers that the inclusion in the British Standard Specifications for Ships Material of tests to ascertain the Elastic Limit or the Yield Point would not justify the dislocation of the ordinary commercial testing as carried out in Works Test Rooms which would be entailed thereby.

TRADE AND CRAFT.

Structural Ironwork.

At the extensive new premises of Messrs. Whiteley's, Ltd., in Bayswater, we are informed, fire-escape stairs, and the balconies which are used for connecting these stairs, and also for loading purposes, were supplied by the St. Pancras Ironwork Co., Ltd. In this connection a rather interesting problem arose regarding the obstruction of light, and in order to solve it the company's patent renewable ferro-concrete treads, which had been originally specified for all the stairs, were eventually replaced by perforated iron treads and risers, made to meet the ordinary requirements of the London County Council, the concrete treads being used in one staircase only, and in small portions of the other stairs where the conditions rendered a non-slippery tread specially advisable. We understand that the stairs were made and fixed in a remarkably short time.

The problem of avoiding loss of light where stairs have to be supplied to meet the necessities of escape in case of fire is illustrated in an interesting way at another large public building where the stairs were being made by the St. Pancras Company at the same time as those for Messrs. Whiteley, namely, the new Polytechnic building in Regent Street. Here it was arranged to construct most of the landings as pavement lights, so as to give the greatest amount of light to the windows below. Such an arrangement is, of course, an expense which owners who are obliged to put in fire-escape staircases might be anxious to avoid, but the resulting economy of light is such as to justify the adoption of glazed landings in many cases. Another instance where this has been done is in the case of escape landings outside the windows at the new Barnato Memorial wing of the Middlesex Hospital.

The old St. Pancras Company referred to is now in process of reorganisation. We understand, however, that the work being done continues on a very large and satisfactory scale, and that the new management entertain lively hopes of greatly extending the operations of this well-known old company, who are now better equipped than ever to deal promptly with any work entrusted to them. The work done in pavement lighting in Manchester and elsewhere during the last quarter of 1911 has been very large, and the fire-resisting door department has been very busy. The foreign and colonial contracts now on hand amount to large sums, including galleries, chambers, and flooring for high-tension electric switchgear in India; in addition to which large orders for stable fittings have just been completed for Louis Castells, Esq., Buenos Aires, and for H.H. the Maharajah Gaekwar of Baroda; also a repeat order for specially designed stall divisions and mangers for the quarantine and sanitary authorities at Alexandria, Egypt.

Lift Installations.

In connection with extensions and additions now being carried out to Messrs. Bek, Frean and Co.'s premises at Bedfordsey, Messrs. Smith, Major and Stevens, Ltd., of London and Northampton, have received instructions for the installation of one of their full automatic push-button electric passenger lifts, and a large electrically operated goods lift. Among other important contracts

at present in the hands of Messrs. Smith, Major and Stevens, Ltd., are the following:—For the Admiralty: 6 full auto-button-controlled passenger-lifts for each of H.M. battleships "Ajax," "Thunderer," "Monarch," and "Conqueror" (similar machines have recently been completed by them on H.M. battleships "Neptune" and "Orion"); 2 electric passenger lifts for Messrs. Boots' premises at Bath and Derby; 2 electric passenger-lifts for the Swansea General Hospital; 2 electric lifts for Messrs. Anderson, Son and Hedley's new premises, Newcastle-on-Tyne; 12 machines for export to Australia; 2 for Wellington, New Zealand; and 6 for South America.

INSTITUTE OF BUILDERS' DINNER.

The annual dinner of the above Institute was held in the Whitehall Rooms, Hotel Metropole, on Wednesday, January 24th, Mr. James S. Holliday, President, being in the chair. Among those present were Messrs. W. Nicholson, J.P., Gerald C. Horsley, Edgar Horne, M.P., C. W. Ball, J. Arcsott-Bartrum, E. J. Brown, Jas. Carmichael, C. FitzRoy Doll, F. L. Dove, B. I. Greenwood, L. Horner, F. G. Minter, C. F. A. Voysey, H. D. Searles-Wood, Wm. Willett, Maurice E. Webb, T. G. Costigan, secretary, and many others.

Mr. H. H. Bartlett, proposing the toast of the "Architects and Surveyors," said they had heard a good deal recently of the responsibilities of the architect. The architect, however, saddled himself with many trivial responsibilities which any number of builders would be glad to bear. Why should the architect trouble himself, for instance, about the price of a pair of butts? Many specialists were now engaged in building work, and all that the builder had to do was to pay the accounts and take the general responsibility.

The architecture of modern times had vastly improved; and it compared very favourably with that of past years. New materials were constantly being introduced. Reinforced concrete was comparatively new, but he was confident that from it the architect would be able to produce a building that they could look at with pride.

The surveyor was a friendly medium between the architect and themselves; he carried out his work well, and it was the builder's own fault if he did not know how to price his quantities.

Mr. Gerald Horsley, responding for the architects, referred to the cordial relationship which now existed between architects and builders. This mutual understanding was founded upon one common desire—that good work should be done. In that way only could the obligation to the client be fulfilled. Having commented upon the work of the association, Mr. Horsley said that, supplementary to the teaching and apprenticeship through which all young architects had to go, two objects were held in view: (1) That the student should become an accomplished designer and a first-rate artist, and (2) that he should have a thorough acquaintance with the arts and crafts connected with architecture and building. In the accomplishment of this latter end, the builders could materially assist, for in the builders' yards they were accustomed to find the best technical work. The British workman, he believed, was the best; he should be

encouraged to produce the best work of which he was capable, and he should be assured that his so doing would gain for him much more than a living wage.

Mr. Edgar Horne, M.P., responded humorously for the surveyors. The surveyor, he said, was more permanent than the architect; architects were only a fashion. If a work were pulled down in forty years' time, another architect would put up a different building altogether. But if a surveyor said that a certain area of land was an acre, it would still be an acre of land a thousand years hence, and not an inch less. The architect was the bully who was always asking for what it was impossible to give.

Mr. H. D. Searles-Wood, proposing the toast of "The President," said that an inspection of the Victoria and Albert Museum would convince everyone that Messrs. Holliday and Greenwood built "diligently and faithfully." The speaker then quoted from some ancient Babylonian building by-laws, which were framed on the principle of an eye for an eye, a tooth for a tooth. One of these decreed that if a house fell and killed the owner the builder also should be put to death. Mr. Holliday, concluded Mr. Searles-Wood, was a gentleman of wide experience, and one who was interested in many religious and philanthropic institutions.

Mr. J. S. Holliday, replying, said it had been his privilege for thirty years to be associated with Mr. Greenwood, and he was glad to say how successful that union had been. Turning to the affairs of the Institute, the speaker said they had not had a brilliant season, but good work had been done in two matters of trade importance. A form of contract with specialists had been drawn up by his Council, approved by the L.M.B.A., and practically accepted by the National Federation. He hoped that this would prove a fair and honourable contract all round. A committee had been appointed to consider the resuscitation of the apprenticeship system, and the proposed draft of indentures had been practically accepted by the L.C.C. Mr. Holliday then described the good work that was being done for education at the Brixton School of Building. The Institute, he said, had canvassed the whole trade throughout the kingdom, and the replies had been practically unanimous in favour of apprenticeship. Trade was undoubtedly improving, but clouds of depression were still hovering around. Some attributed this to the persistent demand for shorter hours and larger wages, others to legislation. Legislation had certainly affected the building trade during the last few years, but he hoped that, if let alone for a time, they would return to one of those periods of prosperity which now were nearly long ago.

Mr. B. I. Greenwood then proposed the final toast, "The Guests," to which Mr. FitzRoy Doll replied.

MANUFACTURING STONE FROM SLAG.

The American Consul at Nuremberg, in discussing the manufacture of building stone from smelter and blast-furnace slags, states that it is an industry of considerable importance in Germany, and is carried on to a greater or less extent by the owners of nearly all such plants. The process is not patented, and is very simple in details, and practically all blast-furnace and smelter slags are suitable for

the purpose. The slag, however, must be in granulated state. After it has been allowed to harden it is unsuitable, and all attempts to utilise slag which has been crushed or ground, having once hardened, have failed to produce a solid stone.

The slag is granulated by the addition of water as it flows from the oven or furnace. It is then mixed with lime—pulverised slaked lime or milk of lime—in the proportions of 7 to 10 parts of slag to 1 of lime, according to the nature of the slag, and while in this condition it is subjected to pressure in moulds of the desired size and shape by means of a special type of press capable of exerting a pressure of 22,000 to 50,000 kg. Having been thoroughly mixed with the required proportion of lime, the granulated slag is allowed to stand for one hour before being put through the press, and when pressed the stones are stacked in the open air.

After three or four weeks, according to the weather, they are ready for use. They harden slowly in a low temperature, and if subjected to frost before they are thoroughly hardened they are liable to crumble. In the winter the stones may be hardened in steam-heated rooms. The stones grow harder with time, and after several years are stated to have a resistance of 100 kg. per sq. cm.

BUILDERS' FOREMEN'S ASSOCIATION DINNER.

The eighteenth annual dinner of the above association was held in King's Hall, Holborn Restaurant, on Saturday evening last, Mr. Joseph Randall presiding. A large company was present, amongst whom were noticed Messrs. B. E. Nightingale, W. A. Harford (of Higgs and Hill), Brees Homan, J. W. Jerram, Frederick Purton, G. W. Holt, William Regan, George Thompson, Thomas Costigan, T. Evans, W. Townsend, and Benton Rees.

Mr. Joseph Randall, proposing the toast of "The Builders' Foremen's Association," explained that he was present against the strict injunctions of his medical adviser, and he hoped they would excuse his early departure. He recalled the fact that he had occupied the presidential chair of the Builders' Benevolent Institution in 1884. With regard to their own association, he was pleased to say that, by the energetic management of the committee, they would be able to increase the amount of pensions by 2s. per week from June next.

Mr. G. W. Holt (president), in reply, said their thanks were due to their many friends for subscribing so generously towards the pension fund, and to Mr. Joseph Randall for his presence among them that evening. The pension fund, he continued, was founded only nine years ago, and it was something to be proud of that the balance in hand now stood at £1,380 3s. 7d. This, in itself, without any other inducement, should be sufficient to bring in many new members. He cordially invited all non-members to come in and assist in the noble work of preparing for the evening of their lives.

Mr. Thomas Costigan, proposing the toast of "The Building Trades," attributed the depression in business to Government legislation. He would like to say how much the master builder owed to his foreman. A good foreman would turn everything in the right way, but a bad one would produce a deficit.

Mr. B. E. Nightingale, in reply, spoke hopefully of a revival in trade. He was convinced that it must come eventually.

Mr. T. Evans (vice-president) then proposed the toast of "The Visitors," to which Mr. W. Townsend replied.

COMPETITIONS.

The Scottish National Memorial to King Edward VII.

The following six selected architects have, it is understood, accepted the invitation of the Executive Committee to send in designs for the Scottish National Memorial to the late King Edward VII.:—Edinburgh—Mr. Hippolyte J. Blanc, R.S.A.; Mr. G. Washington Browne, R.S.A., and Sir John Robert Lorimer, A.R.S.A. Glasgow—Mr. J. J. Burnet, A.R.S.A., and Mr. H. E. Clifford, F.R.I.B.A. Inverness—Mr. R. J. Macbeth, F.R.I.B.A. The memorial is to be associated with Holyrood Palace and its surroundings.

LIST OF COMPETITIONS OPEN.

FEBRUARY 3RD. NURSES' HOME, BOLTON INFIRMARY.—Premiums, £30, £20, and £10. Mr. John B. Gass, F.R.I.B.A., has been appointed the assessor.

FEBRUARY 17TH. NEW OFFICES FOR THE PORT OF LONDON.—The Port of London Authority invite preliminary sketch designs for new head offices in Trinity Square, and for lay-out of a building site. Sir Aston Webb, R.A., is the assessor.

FEBRUARY 17TH. ELEMENTARY SCHOOL, YORK.—The City of York Education Committee invite competitive designs for a public elementary school to be built in Campleston Lane, Bishopthorpe Road. Assessors, Messrs. T. Mellard Reade and Son, Liverpool. Apply, J. H. Mason, secretary, Education Offices, Clifford Street, York.

MARCH 15TH. LAYING OUT ESTATE, PRESTATYN.—Designs for laying-out the Prestatyn Estate are invited. Premiums of £50, £30, and £20. Application (with 19s. 6d. deposit, returnable) was to be sent by January 8th to Lord Aberconway and the Trustees of the Prestatyn Estate, 33, Henrietta Street, Strand, W.C. Designs by March 15th. Judge, Mr. H. V. Lanchester, F.R.I.B.A.

MARCH 16TH. PUBLIC OFFICES, HARROW.—Harrow-on-the-Hill Urban District Council invite designs for enlargement and alterations of their public offices, at a cost not to exceed £4,500. Premiums, thirty, twenty, and fifteen guineas. Plan and instructions (£1, returnable) from Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, Council Offices, Harrow-on-the-Hill. R.I.B.A. will be asked to appoint an assessor.

MARCH 31ST. NEW PARLIAMENT BUILDINGS, WINNIPEG.—Regulations governing the competition for the new Parliament buildings for the City of Winnipeg may be had from the High Commissioner for Canada, 17, Victoria Street, Westminster. [The date formerly announced for the close of this competition has been extended from that formerly announced.]

AUGUST 30TH. THE HENRY SAXON SNELL ESSAY.—The Henry Saxon Snell prize of fifty guineas and silver medal of the Royal Sanitary Institute is offered for an essay on "Suggestions for Improvements

in the Ventilating, Lighting, Heating, and Water Supply Appliances and Fittings for an Operating Room and its accessory rooms for a General Hospital of 400 Beds (no Students)." Essays (in which two competitors of different professions or crafts may join) to be delivered before 4 p.m. August 30th, to the Secretary, Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., from whom full particulars may be obtained.

LONDON MASTER BUILDERS' ASSOCIATION.

A council meeting of the London Master Builders' Association was held at the offices, Koh-i-Noor House, Kingsway, W.C., at 4 p.m., on Thursday, January 18th, when the chair was taken by the President, Mr. G. Bird Godson.

The Finance Committee's report was submitted, and the Council, on the committee's recommendation, agreed to discharge in full up to date the claims made upon the association on behalf of the National Federation Reserve Fund.

The Amalgamated Society of Carpenters and Joiners gave official notice to terminate the existing working rule agreement on June 8th next, and with the notice was forwarded a proposed new working rule agreement which was signed jointly by the secretaries of the Amalgamated Society of Carpenters and Joiners and of the Furnishing and Cabinet-Making Societies. It was proposed to hold a conference with the object of discussing the recognition of the latter society, which the Council had declined to acknowledge as a branch of the building trade. The Council maintained its objection and declined to hold a conference to consider the matter.

The following were elected ordinary members of the association:—Mr. B. E. Nightingale, Albert Embankment, S.E. Messrs. E. A. Roome and Co., 36, Basinghall Street, E.C.; Messrs. W. Blay Ltd., Dartford, Kent; Messrs. F. and F. J. Wood, 64, Cleveland Street, Mile End, E.; Messrs. Lole and Co., 12A Trafalgar Square, Chelsea, S.W. The firm of Messrs. Arthur Newman, Ltd., Cranbrook Road, Ilford, E., was nominated as an ordinary member.

It was decided to hold the annual general meeting on Thursday, February 20th next, and the annual dinner in the Whitehall Rooms, Hotel Metropole, Charing Cross, on Thursday, February 22nd, and it is hoped that the President will be well supported by the members on both occasions.

Various matters of trade importance and interest were considered.—THOMAS COSTIGAN, Secretary.

OUR PLATE.

Mr. Louis de Soissons' design for the central space of a covered market, which has gained for him the Tite prize this year, is a brilliantly executed piece of work exhibiting the influence of French training, the drawings themselves being especially commendable.

Drawings of London and Oxford.

At the gallery of the Fine Art Society, 148, New Bond Street, W., there will be on Friday and Saturday next, from 10 to 6, a private view of an exhibition of water-colours of London and Oxford by Mr. Walcott, whose work as a delineator of architecture is of the very highest quality.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
FEBRUARY 7th, 1912.

Volume XXXV,

No. 890.



ST. ANDREW'S SQUARE, EDINBURGH. DRAWN BY HANSLIP FLETCHER.

This is one of a series of illustrations in "Edinburgh Revisited," by Mr. James Bone, recently published by Messrs. Sidgwick and Jackson, price 21s. net—a book notable alike for its literary and its artistic qualities.

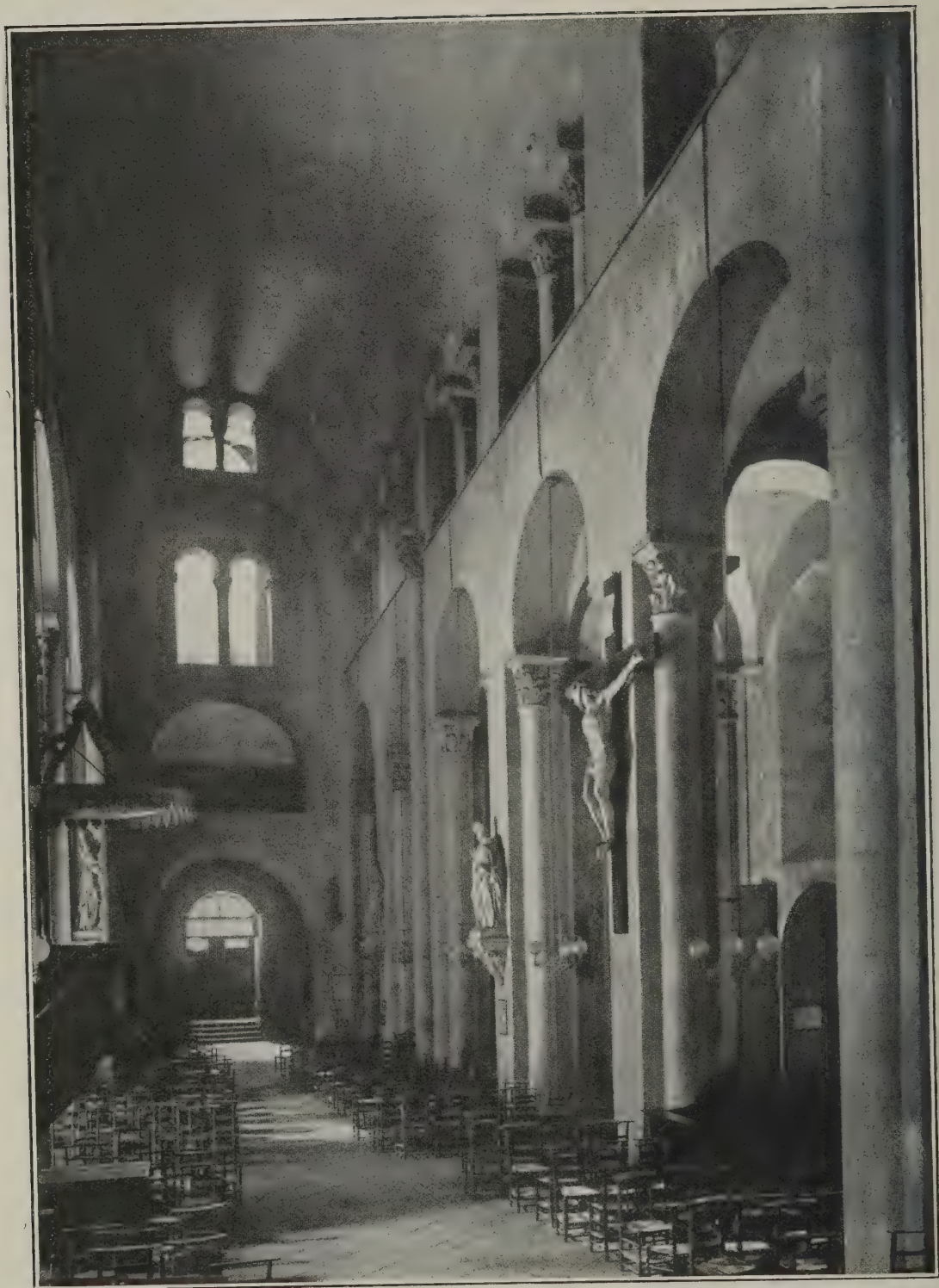


FIG. '1. THE NAVE OF NOTRE DAME DU PORT, CLERMONT-FERRAND (PUY-DE-DÔME)

(From "*Romanesque Architecture in France.*")

THE ARCHITECTS' & BUILDERS' JOURNAL.

FEBRUARY 7th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 690.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

French Romanesque Architecture.

WHERE does Romanesque architecture show so much architectural interest, such extraordinary variety of experiment and suggestion, as in France, and in the south of France more especially. German Romanesque, it is true, shows more of a coherent purpose; it is, in fact, a round-arched style, tolerably complete in its aims, and might very well have been developed into a still finer national architecture, had not the Germans been tempted aside from it to take up Gothic, which they only practised with very partial success, their Gothic being in artistic spirit far inferior to that of France or England. French Romanesque never required the consistency of a style; it was a series of experiments, of most extraordinary variety, into which were blended reminiscences both of Byzantine and of Roman architecture—the richness of the former and the monumental solidity of the latter. In the tenth century there were probably enough remains of actual Roman work in France to exercise a strong influence on the Romanesque builders, and over and over again we see the attempt to compel the forms of Classic architecture into the service of buildings of different proportions and for different uses than those of the Romans. Everywhere we find the engaged column, with a more or less rude imitation of the Ionic capital, trying to play the part of a buttress, the architectural expression of the function of the buttress having been yet arrived at; in some examples we almost find it, as one may say, in the very act of transmutation into buttress form. But the most noteworthy feature of the French Romanesque is its completely masonic character. Everything in it is monumental in expression and in material; instead of the wooden roofs of the Italian basilica we have the heavy barrel-vault built in stone, in some cases roofed outwardly also with stone slabs. And in this monumental character there is a variety in design, in the disposal of the structural portions and in the decorative carving, which renders it a remarkably suggestive style. It is full of architectural ideas which may be carried out in a rather crude manner, but which seem almost waiting for a more cultured and civilised age to take them up again and show what could be made of them.

It is partly for this reason that the collection of more than two hundred excellent photographs of French Romanesque architecture, issued with an introductory chapter by Mr. Julius Baum, ought to be a very welcome publication to architects, not merely for the historical interest of the examples given, but for their architectural value as a source of inspiration. The series of photographs includes a good number of churches which are not very generally known, and of interest of which has not been exhausted by repeated reproduction; and the photographic illustrations are so clear and fine in themselves that for the purpose of study they may to a great extent be said to supply the place of an actual inspection of the buildings. Of course, it would be incomplete if we had the photographs interleaved with

plans; but in the introduction a good many plans and sections are given; and the introductory chapter is a very well-written and able analysis of the phase of architecture which is illustrated in the photographs.

Dr. Baum considers that the experiments in church planning made in the Romanesque period were to a great extent due to a kind of contest between the traditional basilica church plan, as the most convenient for a congregation, and the central type of plan, as the most effective in an architectural sense. And but for the invention of cross-vaulting, the central type of plan might have conquered; it gave facility for the dome, the noblest and most effective form of monumental roofing. The barrel-vault roof of the long form of church, though most impressive in its monumental solidity, had the structural disadvantage of requiring very thick walls throughout the whole length of the building, instead of the concentration of weight at certain points rendered possible by the cross-vault; and it had the defect in regard to internal appearance, that the vault was always rather dark; to get windows into the springing of the vault involved rather difficult masonry construction, and so it was only lighted from windows below the springing. The interior of the church of Notre Dame du Port, Clermont-Ferrand (Fig. 1), shows the effect of this severe monumental manner of building; in this case there is an attempt to get more light into the vault by a window high up in the west wall, but this has only a very partial effect. Fig. 2 gives the transverse section of the church. Architectural severity could hardly be carried farther than in this interior, the arches

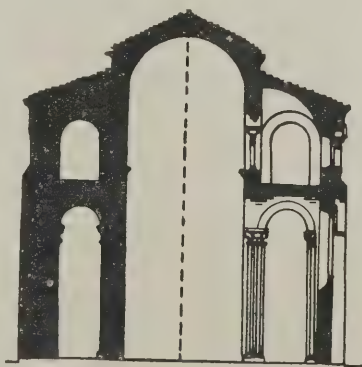


FIG. 2.—CROSS SECTION OF NOTRE DAME DU PORT, CLERMONT-FERRAND.

not having any kind of moulding. The two shafts, one in the foreground and one further down the building, which go up to the base-line of the triforium, look as if there had been the intention to carry out the system of building which is found in many of these barrel-vaulted churches, and also in many of the early cross-vaulted churches, of building a massive arch from side to side at regular intervals, below the surface of the vault and as if carrying it. Examples of this are seen in the interiors of the churches of Bussière-Badil and Preuilley (Plates 56 and 57 in the book), which are barrel-vaulted; and in the interior of Figeac (Plate 58) we see the same principle of the heavy transverse arches with the bays between them cross-vaulted. In the

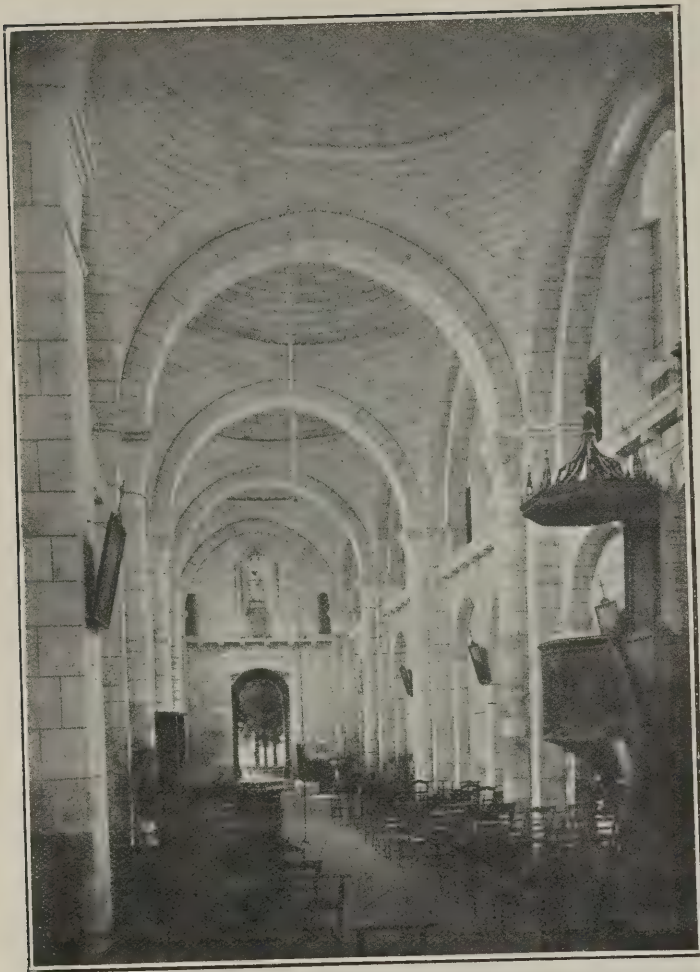


FIG. 3.—NAVE OF THE CHURCH AT GENSAC (CHARENTE).

case of the cross-vaulting the heavy transverse arches between the bays may be thought to have steadied the abutment of the vaulting; in the case of the barrel-vault it is difficult to understand what advantage was supposed to be derived from them, as they could not avail to reduce the thickness of the walls and vault between these points; but it is possible that the transverse arches, built first, supported a centering for the vaulting between them—that is the only practical use one can suppose for them. The same employment of heavy-built transverse arches at intervals occurs in a good many of the Italian timber-roofed basilica churches, as in so advanced a building as San Miniato, for instance. In the case of the timber-roofed churches these arches served as structural ties to the walls, and added a greater effect of architectural solidity to the building.

This system of accentuating a timber-roofed church by solid-built arches across it at intervals has still an architectural value, and might be considered as an element of church design, provided of course that the plan, in the disposition and grouping of the points of support, gives an obvious motive for it. The erection of built masonry or brick principals to carry the purlins has been adopted in some modern churches; but that is not quite the same thing.

It is not likely that the built barrel-vault will ever be adopted again for churches, monumental and impressive as it is in a sense. In Romanesque France the desire in some quarters to substitute the central or the cross-armed type of plan for the long one led to the employment of dome-roofing, so specially suitable to this type of plan; and then the dome roofing was transferred to the long plan, as we see it at Souillac and at Gensac, and other churches in the Charente district, where the domes, instead of marking central points in the plan, are merely disposed in a row, one over each bay of the longitudinal plan. The interior

of Gensac (Fig. 3) shows the effect of this. It is a contradiction to the general ideal of a long form of plan, but has a very monumental appearance. Acoustically must be bad, but acoustics are not the only, nor should they be even the chief consideration, in church architecture. It is noticeable that in these domed churches of the Charente district the concave curve of the pendentive is not stopped on the extrados of the arches, but extends to their intrados, so that the faces of the voussoirs themselves continue the curve, instead of being in a vertical plane: the effect of this can be quite clearly seen in the photograph. The point is worth attention, as it may be a question for modern dome-builders whether this is not the most architectural manner of treating pendentives. It seems to convey the impression of being a more genuine piece of masonry structure than the usual treatment in the pendentives of Renaissance domes.

The engaged column used as a buttress is continuous with in French Romanesque, in the south especially. Sometimes, as in the transept of St. Pierre at Aulnay, we find half-columns planted against the wall as a kind of framework to the façade, without any pretence of carrying anything, the capitals merely stopping short with nothing on them; they wanted some way of framing in the wall and did not know what else to put except a column. Sometimes, as in the apse of the church at Savennières (Fig. 4), we see the column almost in the act of turning into a buttress; the capital ending in a kind of pyramid, from which a short square buttress rises to the under-side of the cornice. At Solignac columns and flat buttresses with set-offs at top are used alternately outside the apse, as if they had made up their minds which was the best form. A whole series of photographs affords a most curious picture of an architecture gradually growing into form by the putting together or modifying of details from older styles. Jazeneuil (Vienne) we find the apse decorated with a series of narrow pilasters with a concave moulding at the top.

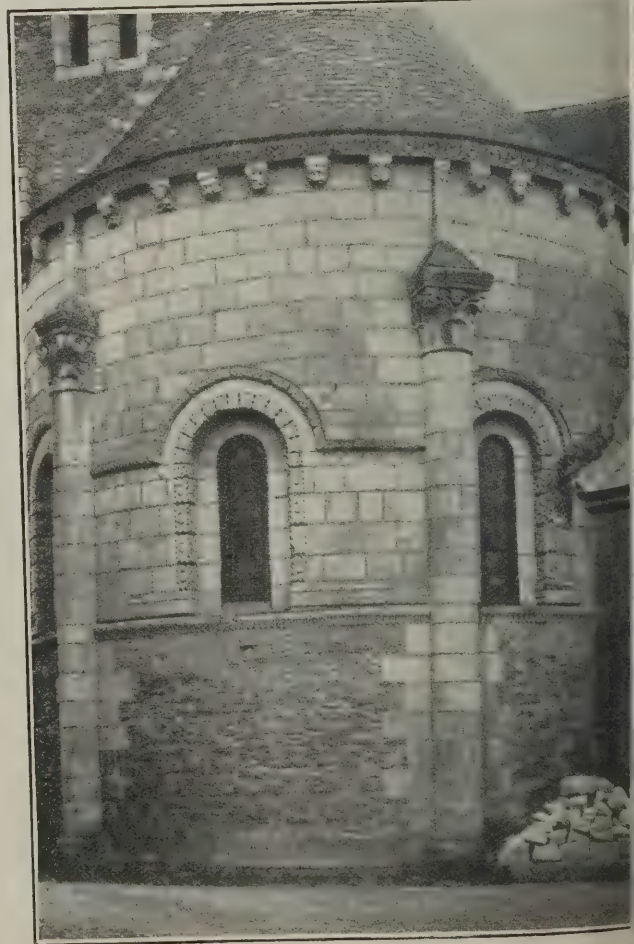


FIG. 4.—APSE TO THE CHURCH AT SAVENNIÈRES (MAINE-ET-LOIRE).

The Institute and the Society of Architects.

THE negotiations which have been long going on between the Institute and the Society of Architects, with the object of the union of the two bodies to promote the passing of a Registration Bill, have, of course, been in the nature of private documents. The result of the meeting called to endorse them, however, has been printed in the Institute "Journal," and is practically therefore public property, and the refusal to endorse the proposals, by a large majority, shows, at all events, that there are a good many members of the Institute who are hostile to the scheme, at all events in its present form. It is perhaps no serious violation of the privacy of the meeting to say that the proposal lost nothing by the way in which it was brought forward, for a more able and masterly speech than that of Mr. Gibson, in moving the resolution, has seldom been heard at an Institute meeting. We should take it that the outline of the proposed Bill which the Institute were to undertake to promote, if the Society of Architects would amalgamate with them, had something to do with the general opposition; we cannot cite from a private document, but we may say that it embodied some proposals which Parliament would certainly never accept. What is to be the next step in the matter is not apparent; but our impression is that the amalgamation of the Society with the Institute is not very likely to take place now.

The Strand Building Site.

THE announcement that the London County Council have consented to sell the freehold of the site in the Strand island required by the Commonwealth of Australia marks an important new departure in their method of dealing with this land. An amendment that was proposed to the effect that the Council, while adhering to the principle of the retention of the freehold, welcomed the proposal for the sale of the land to a British Dominion, was defeated by 61 votes to 51. The object of the amendment evidently was to represent that this parting with the freehold was to be regarded as a special act of grace to the Australian Commonwealth, and not as a precedent. The refusal of the Council to accept this amendment implies that, with the view of turning this building property the sooner to account, they are prepared to depart from their policy of selling it only as leasehold, or at all events to leave it open to them to do so. Probably this decision will lead to a greater facility in disposing of the rest of the site, which has long lain unprofitably on their hands. Lord Alexander Thynne, the chairman of the Improvements Committee, referred to the scheme put forward three or four years ago by those who took the title of "The Strand Further Improvement Committee," with which, he said, he had never had any sympathy. He might well say so, for their proposal was one which was made too late, and was supported by absurd arguments. It was maintained that the Strand was constricted at its eastern point, which is actually the widest part of the street, the notion apparently arising merely from the fact that the road takes a curve to get round St. Mary's Church, and then returns to what would have been its straight line had there been no church to get round. The chief futility of their proposals, however, lay in the fact that the western part of the frontage had already been set out and built upon, according to the original plan proposed by the Council, and it was necessary to treat the remainder of the site in symmetrical conformity with the part already laid out. It would have been quite possible, by the sacrifice of some building land, to have made a fine *place* there, with St. Mary's in the centre of it, by setting back the north boundary line of the Strand, parallel with the south side of the street, far enough to align the north side with the line of street facing the Law Courts. That would have been so great a public improvement, would have given London such a fine open space, with the church and perhaps a strip of garden in the centre of it, that it would have been worth the sacrifice of some building land, in the public interest. But to have attempted



FIG. 5.—INTERIOR VIEW OF THE CHURCH OF SAINT
BENOÎT-SUR-LOIRE (LOIRET).

filled with a repeating flower which has somewhat the effect of the English ball-flower ornament; at St. Benoît-sur-Loire we find solid cylindrical stone columns, obviously reminiscent of the Roman column, but thicker in proportion, and with heavy richly carved quasi-Classic capitals. The view from the ambulatory aisle, looking into the church (Fig. 5), gives a good illustration of these Romanesque columns derived from Classic forms, and also shows the fine composition of the main building, with its effective contrast of blank wall and arcades. The value of blank wall in a design is, in fact, one of the lessons to be got from French Romanesque. Many suggestions, too, are to be got from the rich and effective carved ornament of these churches, which contains ideas that might be worked out further in a more refined and modernised form.

The plans which are given in the text of Dr. Baum's introduction form a good classification of different possible types of church plan; the three-aisled basilica with an apse at the end of each aisle; the single-aisled vaulted church with a transept and three apses on its eastern side (the centre apse of course larger and more important than the side ones); the three-aisled or five-aisled plan in which the line of the aisle is continued round a main apse, and an ambulatory. All these are types which might be used in modern church planning. A very remarkable French plan of this period, which is not given, is that of Parroux, which shows a great circular chapel at the east end, with an inner arcade. There must have been some special motive for such a feature; probably it was intended as a memorial or monument chapel. Though it is now what may be called a ruin, the glass gone out of the windows, and the floor covered with vegetation, the architectural features are in pretty good preservation, and the view of the interior (Plate 7 in the book) forms one of the most interesting in a remarkable collection of illustrations.



A SHEFFIELD IMPROVEMENT SCHEME.

changing the line after the lay-out of the site had been accepted and part of the buildings erected, would have been throwing away money for what would have been no architectural advantage.

Street Improvement at Sheffield.

A GREAT improvement in the entrance to Sheffield from the railway station, to which the municipal authorities will do well to give serious consideration, has been proposed by Mr. Gibbs, a well-known architect in that city. He proposes to carry a level street from the station, on a viaduct with an architectural portal in the form of a monumental arch; the space under the viaduct to be utilised as the wholesale market on the general street level. A considerable area of skylight is provided on the viaduct level to light the lower market. The spaces between the skylight (50 feet wide) might be rather deficient in light in dull weather, but with prismatic glazing there would be light enough for practical purposes. On the viaduct level it is proposed to build retail markets which would form architectural flanking façades to the viaduct road, with the principal block accentuated by a portico and a dome symmetrically placed on each side of the roadway. From the published sketch it would appear likely to form a most dignified entrance to the city from the railway station, and the whole constitutes what may be justly called a great public improvement. The accompanying illustrations of the proposed improvement are reproduced from the "Sheffield Daily Telegraph."

Royal Academy Lectures.

IN the first of his final series of lectures on sculpture at the Royal Academy, Mr. W. R. Colton spoke strongly in regard to the neglect of public art in this country. Whether he was even correct in saying that "England was a country of great intentions which were rarely carried out" may be questioned. Where are the "great intentions"? Not in connection with the St. Paul's Bridge, the last large

scheme, at all events. The indifference of the public in regard to existing works of art was especially touched upon and in reply to the objection that this climate is unsuitable for open-air sculpture Mr. Colton instanced the sculptur on the Albert Memorial to the contrary, and drew attention especially to the fine quality of the work of Armstead (the reliefs on the north and east sides of the podium) on the Memorial, which is in fact full of interest, though few people seem to be aware of the fact. That is the misfortune in this country; even when a fine thing is done no one seems to be aware of it or to care about it.

In his second lecture Mr. Colton went a little out of the field of sculpture to speak of the neglect of national art in regard to the purchase of pictures, complaining that for the National Gallery we were merely purchasing antiquities at great prices, and that if a picture as fine as anything Titian's were produced now it would probably not find a purchaser; certainly not a Government purchaser. This is a legitimate criticism if we compare the official support of art in this country with the liberal expenditure on pictures and sculpture by the French Government; but in speaking of the National Gallery Mr. Colton seems to forget that it is intended as an historic collection representing as far as possible, all past schools of painting; and that the reason a high price is paid for a typical work by an old master is that the number of such works is limited, and that the artist being long since dead, no more of them can be had. With his onslaught on modern impressionism in painting, and the love of the ugly and grotesque in sculpture, we entirely sympathise. The ideal before the sculptor, he said, must be a fine idea perfectly executed. The question then had to be answered, What was perfect execution, and what made an idea fine or commonplace? The Greeks and Romans thought one thing; the craftsmen of mediæval Italy thought the same; in the greatest period of modern French sculpture there was still the same ideal. But of late there had come over us a straying after a brazen serpent set up in our midst, and brutal expression and execution was called "power." But the domestic

the frivolous, or the grotesque should not find a place in sculpture.

In his concluding lecture Mr. Colton passed in review some of the French work of the seventeenth, eighteenth, and nineteenth centuries, illustrating works by Clodion, Goujon, Houdon, Rude, Carpeaux, and Dalou. The work of the last-named sculptor we thought rather overpraised; he had immense power, but no restraint, and was too fond of violent action. To the list the lecturer added Saint-Gaudens, as a sculptor French by descent, though American by adoption. Mr. Colton pointed out the curious want of any indication of the bodily form under the costume in the portrait of Stevenson, and in a caryatid figure in the Luxembourg; to our thinking the same applies to the remarkable seated figure in the Adams monument, which is a conception of genius, but is badly modelled. Saint-Gaudens is no doubt far away the best sculptor that America has yet produced, but he is greatly overrated; the Shaw monument, of the officer riding with his negro troops, was enthusiastically praised by the lecturer, and has the merit of being a piece of simple sincerity in sculpture; but it is entirely destitute of the quality of style.

Halifax Town-Planning Competition.

THE competition for the best town-planning scheme for the improvement of Halifax, which was decided recently by Professor Adshead as assessor, forms a precedent which might very well be followed in other cases. The competition was not promoted officially, but by the liberality of one person, Mr. Whitley, of Halifax, who offered premiums of one hundred guineas, thirty guineas, and twenty guineas, for the three best schemes presented by architects, solely with the view of bringing the architects to the front in a matter of this kind. We presume that the competition was limited to Halifax architects. The assessor speaks very highly of the general merit of the plans submitted. Those who know Halifax and its hilly situation will imagine that there must have been some special difficulties in evolving a practical town-planning scheme for such a situation, though the peculiarities of the site may also have proved in some ways suggestive. The point to be noted, however, is that an inhabitant of the town has initiated a competition of this kind for the special purpose of bringing forward and premiating the ideas of the architects on the subject. If influential men in other towns would follow his example, the architectural profession would be much strengthened and assisted in their rather one-sided struggle with the city engineers in the preparation of town-planning schemes under the Act.

The Manchester Reference Library.

WE regret to learn that there is an intention on the part of the Manchester Corporation to destroy the fine and dignified building in King Street which was the old Manchester Town Hall, and is now used as a Reference Library, apparently in order to dispose of the site to Lloyd's Bank for the erection of new premises. The façade of the building, with an Ionic colonnade in the centre, stopped at each end by solid wings with an engaged order, is an excellent example of Classic architecture of the modern period; it is, in fact, one of the best pieces of architecture in Manchester, and, as the old Town Hall, should have an historic interest also. The curious part of the matter is that, according to the information we receive from a correspondent, the Corporation are anxious to sell the building for demolition because the proceeds will be an important assistance to the funds required for the scheme of a new art gallery; so that this excellent piece of the older architecture of the city is to be destroyed in the name of Art. This will be the second time that the claims of the art gallery have been made use of to excuse a piece of architectural vandalism. A good many years ago the Corporation, in opposition to strong protest, destroyed the charming anterior colonnaded galleries of the old Royal Institution,

a work of Sir Charles Barry's, in order to get more room in the building for the picture exhibitions then held there. These two galleries opened opposite to each other out of the central hall, each having a row of columns along it, screening off the lower portion of the gallery; the vista through one of the galleries, looking across the central hall to the other one, was one of the most charming interior effects to be seen in any building in England, and it was ruthlessly destroyed for utilitarian reasons, against the protests of many artists and architects. If the Corporation think that deed has been forgotten and condoned, they are mistaken. Apparently they are now about to pursue the same kind of course with another piece of good Classic architecture, and destroy it for utilitarian and commercial reasons. Manchester sets up the claim to being rather an artistic city; but proceedings of this kind do not support the pretension.

The Pictorial Treatment of Architecture.

AT the rooms of the Fine Art Society there is a collection of water-colours by Mr. W. Walcot which are of interest not only for their artistic merit, but for the fact that they deal mostly with architectural subjects. Mr. Walcot has a great eye for effects of colour and composition, and is a master of perspective, which is more than can be said for some painters who handle architecture. His drawings are not however without the defect that we not infrequently see in the treatment of architecture by painters; the buildings being treated too much from the point of view of mere pictorial effect, and their details obscured or evaded in order to tone down the whole into a broad pictorial composition. Now, we neither wish nor expect to see an artist dealing with a building like an architectural draughtsman's perspective; but we do expect to see some semblance of the real detail of a building. In the large view of the Palais de Justice at Brussels, Mr. Walcot has been very successful in combining the claims of architecture and of pictorial effect; it is a fine view of the building, and has at the same time a broad pictorial effect. But we cannot say the same of such a drawing, for instance, as the one called "Notre Dame, Paris" (No. 40), which could only be taken to represent Notre Dame seen through a fog; every bit of detail is gone, it is unrecognisable except for the title in the catalogue. Notre Dame is really a building of exceedingly solid appearance, and very conspicuous detail; it cannot be represented by a mere wash, which seems a very easy and *laissez-faire* way of doing it. Another proclivity of artists in treating buildings is to make new buildings look old, because they are more picturesque so. This is the case with the drawing of "The Bourse, Paris"; the colonnade, with the groups of people dotted about the steps and at the bases of the columns, makes a very good picture, but one cannot recognise it as the Bourse. Brongniart's colonnade is comparatively modern work (it is just a century old), and its columns are still sharp and clean in line; to look at this drawing, one would suppose it was an ancient Roman building rather than a nineteenth-century erection. The Radcliffe at Oxford, and the Pantheon, give more the impression of actuality. "An Egyptian Composition," in which ancient Egyptian architecture is combined with a crowd of figures (or indications of figures) of the period, which furnish great part of the colour element of the picture, though very effective, shows the same oversight that Cattermole and other painters of mediæval scenes have made in regard to mediæval architecture; they forget that when the mediæval people wore those costumes, the buildings were new, not old and weather-stained. The criticism does not apply so strongly to Egyptian scenes, for the Egyptian buildings had so long a life that a crowd in costumes quite ancient to us might be gathered about a building which would be quite ancient to them; but we imagine the reason for it was the dislike to paint buildings too neat and new. It seems to be forgotten sometimes that all ancient buildings were once new. Mr. Walcot shows some interesting sketches (they are hardly more) of reconstructions of ancient buildings; the

exterior of the Calidarium of the Baths of Caracalla is one, with a brilliant red on the podium; but it is only a general effect, too slightly indicated to be called a restoration. "The Basilica of Constantine in the Early Middle Ages" is a drawing of more force and reality, and is very interesting. An impressive indication of a picture is given in "A Tragedy of Sophocles performed before the Emperor Hadrian," a view from the interior of the theatre, with the scene closed at the top by the open colonnade surrounding the auditorium; it is a very brilliant effect, but only an effect; not a detail either of architecture or personages can be made out.

The tendency with some very clever painters of the present day to treat architectural subjects, great and celebrated buildings, as mere materials for a kind of washed-out or silhouette effect, is to be regretted, because it is not making the best use of architecture as a material for pictures, and it is giving a false idea of the real effect of the buildings. Piranesi and Prout succeeded in making exceedingly fine and effective pictures out of architectural subjects, pictures which are at the same time among the finest and most forcible representations of architecture. And what they did can be done again.

Ventilation of Factories.

IT is complained that the Factories and Workshops Act, 1911, is seriously retrograde in respect to ventilation.

Dr. Arthur Ransome contends that in the consequent "Regulations as to Humidity and Ventilation in Cotton Cloth Factories," which have just been issued by Mr. McKenna, those relating to ventilation can but tend to deterioration in the health of the operatives. The standard of purity of the air, he points out, is greatly reduced. In the regulations previously in force, the amount of carbon dioxide allowed per 10,000 of air was only five volumes in the case of humid sheds, and the same standard was recommended by the then Home Office for dry sheds also. The new regulation enacts, however, that in humid sheds the proportion of carbon dioxide shall not exceed eight, and in dry sheds eleven parts by volume per 10,000 of air in excess of the proportion in the outside air at the time. The former conditions, which had obtained since 1897, resulted in a marked improvement in the health of the operatives; but Dr. Ransome greatly fears that "the new and degraded standard will lead to more ill-health, to respiratory disease, and especially to an increase in the number of consumptives." As Dr. Ransome was a member of the Home Office Committee which, in 1896-7, recommended the standard that is to be superseded, he has doubtless good grounds for his note of warning, to which we trust due attention will be paid. It would be interesting to know the reasons for the retrograde regulation, which, in the absence of explanation, seems to lower the standard without rhyme or reason.

WHAT IS WANTED IN THE BUILDING TRADES.

VIEWS OF MR. F. L. DOVE, L.C.C.

INTERVIEWED by a representative of this Journal on the subject of the articles that have been published under the above heading in our issues of January 10th, 17th, and 24th, Mr. Frederick L. Dove, L.C.C., the eminent contractor, said: "I have read your articles with a great deal of interest, but I cannot see how the suggestions they contain are to be carried out. You cannot prevent a man from selecting any builder he chooses to erect a building for him, nor do I think you would be able to do so, particularly in the present temper of society. That building work be provided cheaply appears to be the be-all and end-all of the majority of present-day clients. Take, for instance, church building, which constitutes an important branch of the work of my firm—indeed, I doubt whether scarcely any other firm

in the kingdom has carried out more of this particular class of work than my own.

"We now find that the conditions are totally different from what they were some years ago. Formerly, after examination of the estimate by the architect or quantity surveyor, the work was not infrequently placed directly with a firm—or, at the most, three or four firms, known to be experts, were invited to tender. Now all sorts of people—builders, builders' agents, or anybody else—are indiscriminately invited to tender; and, provided it is cheap, the committee care not two straws who carries it out, no matter how absurd the tender may be, and the architect is expected to be rather a watch-dog than an artist. I am reminded of a saying of Ewan Christian, one of the most delightful gentlemen it was ever my privilege to know or work for: 'The architect is not a policeman, and I want a man upon whom I can depend to carry out my work.'"

"This demand for cheap work," continued Mr. Dove, "has led to the growth of a purely commercial type of builder, and those of the old school who really enter into the spirit of the designs they are carrying out are getting fewer every year. This tendency, of course, has been greatly accentuated by the modern system of sub-contracting which now prevails to such a large extent, due in the first instance to certain architects (not of the first rank) obtaining sub-contracts not merely for special items such as mosaics, carving, etc., but for the stonework, brickwork, joinery, floors, etc., the result being that the man who took an interest and a pride in his work, and who employed highly skilled and highly paid workmen, loses that interest when he finds his work no better appreciated than the rubbish which is turned out by so-called building firms whose main stock-in-trade may consist of a roomful of telephones.

"It is somewhat remarkable that, in a matter of so substantial a character as building construction, the public adopt the exactly contrary course to that of everyday life. No man in his senses expects to get a perfectly made, well-fitting suit of clothes for the same price as he would pay if he went to an East End ready-made slop shop, and yet this is the course generally adopted when inviting tenders for buildings; consequently competition then becomes a farce.

"With regard to your scheme for preventing a man calling himself a builder unless he is equipped with a knowledge of materials, construction, and so forth (which, of course, can only be gained by his learning the practical and technical part of the work), however desirable this may be (and I for one am in earnest sympathy with it), I do not see much chance of this change being effected unless the public can be brought to differentiate between good and bad work. In the matter of public taste and appreciation of good quality, I think a distinct depreciation has taken place. Let us take furniture for instance. The appreciation of good furniture to-day is nothing like it was thirty or forty or even one hundred years ago. Everything that stands in the way of cheapness must be sacrificed. I do not think that your proposal could be materialised by legislation. It does not seem possible for legislation to decree that if Mr. A wants a building or an alteration to be carried out he must employ X, Y, or Z, or that because W has not qualified he should not be allowed to do the work. So long as a man complies with regulations, Acts of Parliament, and by-laws, etc., in erecting his building, it appears to be difficult for the Legislature to step in. The same remark applies to public work. People who are specially interested in building—such as members of a local council, etc.—are only concerned to get the work knocked off at the lowest possible cost. In view of this fact, I think your article have tended rather towards an ideal state, which, to me seems next to impossible to bring about. So far as our own apprentices are concerned, we have always tried to inculcate the doctrine which you preach, and to get them to appreciate their work and to take a pride and an intelligent interest in it; and on the whole we have, I think, been fairly successful in so doing."



Interior looking West.

THE LADY CHAPEL OF LIVERPOOL



Interior looking East.

AL. G. GILBERT SCOTT, ARCHITECT.

THE ERECTION OF LIVERPOOL CATHEDRAL.—I.

BY ARTHUR GREEN.

The first instalment is here given of a practical account of the erection of Liverpool Cathedral, describing in detail exactly those items in which the architect and the builder are most interested, the article having been written by one who is acquainted with the work at first hand. The concluding portion will appear next week, with further illustrations.

It is just upon eight years since a start was made to build a cathedral church for Liverpool. St. James's Mount was, after much controversy, selected as the site; Mr. G. Gilbert Scott being the chosen architect, while with him was associated the late Mr. G. F. Bodley.

To ensure a solid foundation, borings were taken to ascertain the depth that would have to be sunk to get to the rock.

The cemetery adjoining, and the ground half-way across the site selected for the Cathedral, had been worked as a stone quarry, and after the stone had been taken away the Mount was made up of loose earth, the consequence being that while half the site is virgin rock, the other half is soft soil. Taking a line

vestries, etc., was let to Messrs. Morrison and Sons, builders, Wavertree, Liverpool, in September, 1904, and was done on a schedule of prices, the measuring surveyors appointed being Messrs. Northcroft, Neighbour, and Nicholson, of London. The system adopted in the foundation generally has been to carry down, where concentrated loads occur, large concrete piers, which rest upon the rock; the intermediate parts, where the load is considerably less, and is more evenly distributed, being carried on concrete arches turned from pier to pier. Where the rock is near the surface, the walls rest upon it throughout their length; but even in this case it was necessary to excavate to a considerable depth.

On May 10th, 1906, Messrs. Morrison and Sons, the foundation contractors, were successful in obtaining the work of building the superstructure. It will be remembered that they were the builders of the Rylands Library, Manchester. Work was promptly begun, the Lady Chapel, which was proposed to be completed in four years, receiving most attention. The choir, now in course of erection, is composed of three bays, each 41 ft. centre to centre of the arcade piers, and the sanctuary, 11 ft. 3 in., the width between the arcade walls being 47 ft. The piers of the choir are continued solid across the aisles (which are 13 ft. 6 in. wide), forming a continuation of the outer buttresses. The wall, 5 ft. wide, is pierced by low



LIVERPOOL CATHEDRAL: GENERAL VIEW FROM HOPE STREET (June 22nd, 1911). G. GILBERT SCOTT, ARCHITECT.

rough the centre of the site, there is a sheer fall of 28 ft., which slopes away to considerable depth at the edge of the site. The first piece of building done was that of the foundation work for the lower pier on the south side of the Cathedral. The contract for this work was let to Messrs. Thornton and Sons, builders, Liverpool, and was in preparation for the laying of the foundation stone. This preliminary work having been completed, a large semicircular stand was built, to hold 7,000 people, and on July 4th, 1904, the late King Edward, accompanied by Queen Alexandra, laid the foundation stone. The work of putting in the foundation for the choir, towers, chapter-house,

the first 10 ft. or so being very loose, and having to be removed before the foundation could be put in. By far the largest excavations occur under the north tower, which stands on the extreme edge of the site towards the cemetery. At this point there are four concrete piers, two of them measuring 40 ft. by 28 ft. at their base, and 50 ft. deep, and two 28 ft. square and 40 ft. deep. The foundations along the north side averaged, including the chapter-house, 40 ft. deep. The foundations in every case were taken into the rock. The surfaces upon which stand the various piers, etc., were made level, grooves being cut on the bed and vertical sides to give a key to the concrete. The work of putting in the foundations was completed in fifteen months.

arches to form a passage along the aisles. Each bay in the aisle is in consequence shut off from the other. The barrel vault is divided into panels by ribs, springing at the height of 55 ft. from the floor, the apex of the barrel just clearing the choir aisle windows, and the vault carrying the triforium gallery. There are three windows in each aisle of the choir, the sill being 41 ft. from the floor. Each window is of two 6 ft. 10 $\frac{3}{4}$ in. lights, with a simple form of tracery. On the jambs, inside and out, are carved figures with canopies and crocketed pinnacles over. A carved string runs along the aisle walls inside, and across the low arches, this being filled with winged figures and foliage. A narrow walking-way is tunnelled in the thickness of the



LIVERPOOL CATHEDRAL: THE VAULTING OF THE LADY CHAPEL, FROM ABOVE.

aisle wall (the wall being 6 ft. 3 in. wide), which connects the circular stair (the entrance to the stairs is on the Lady Chapel gallery) and the organ chamber at the west end of the south choir aisle. At the east end the choir aisles have a low barrel vault, carrying a floor above. The vault is carried on a carved cornice, and has a carving course each side of the ridge rib of the vault. Each aisle is lighted by a rose window in the east wall. A similar vault is at the west end of the aisles, the floor above being the organ floor. An ambulatory outside the main east wall connects the two choir aisles, and is lighted by four two-light windows.

The ceiling is a barrel vault, the ribs of the vault being transverse and diagonal, with carved bosses at each intersection of the ribs. The roof over the ambulatory is composed of concrete, covered with asphalt. A low arcade in the east wall of the ambulatory gives access to the bishop's, dean's, and canon's vestries, and at each end of the ambulatory are corbelled-out balconies, with tracery balustrade. The floor is 2 ft. 6 in. below the level of the choir aisle. The arcade piers in the choir are 55 ft. 7½ in. from the floor to the cap, from which spring the arcade arches. The rise of the arch is 20 ft., and the width of the arcade wall 6 ft. 4½ in. The front part of the arcade pier continues past the springing of the arcade arches, forming a vaulting shaft to the cap, which is 84 ft. 6 in. from the floor level. The vaulting springers are immediately above. The vault is quadripartite. There are four main transverse arches across the choir, fully moulded, and 5 ft. wide. The bays of the choir are divided for vaulting, a wall being built across the triforium to form abutment to a minor transverse rib crossing the choir. The smaller bay is then formed by diagonal ribs. The height to the apex of the vault is 116 ft. from the floor level. At the time of writing, a start has been made to fill in the ribs and sheeting forming this vault. The triforium is 82 ft. 6 in. from the floor, the width being the same as the aisle below—13 ft. 6 in.

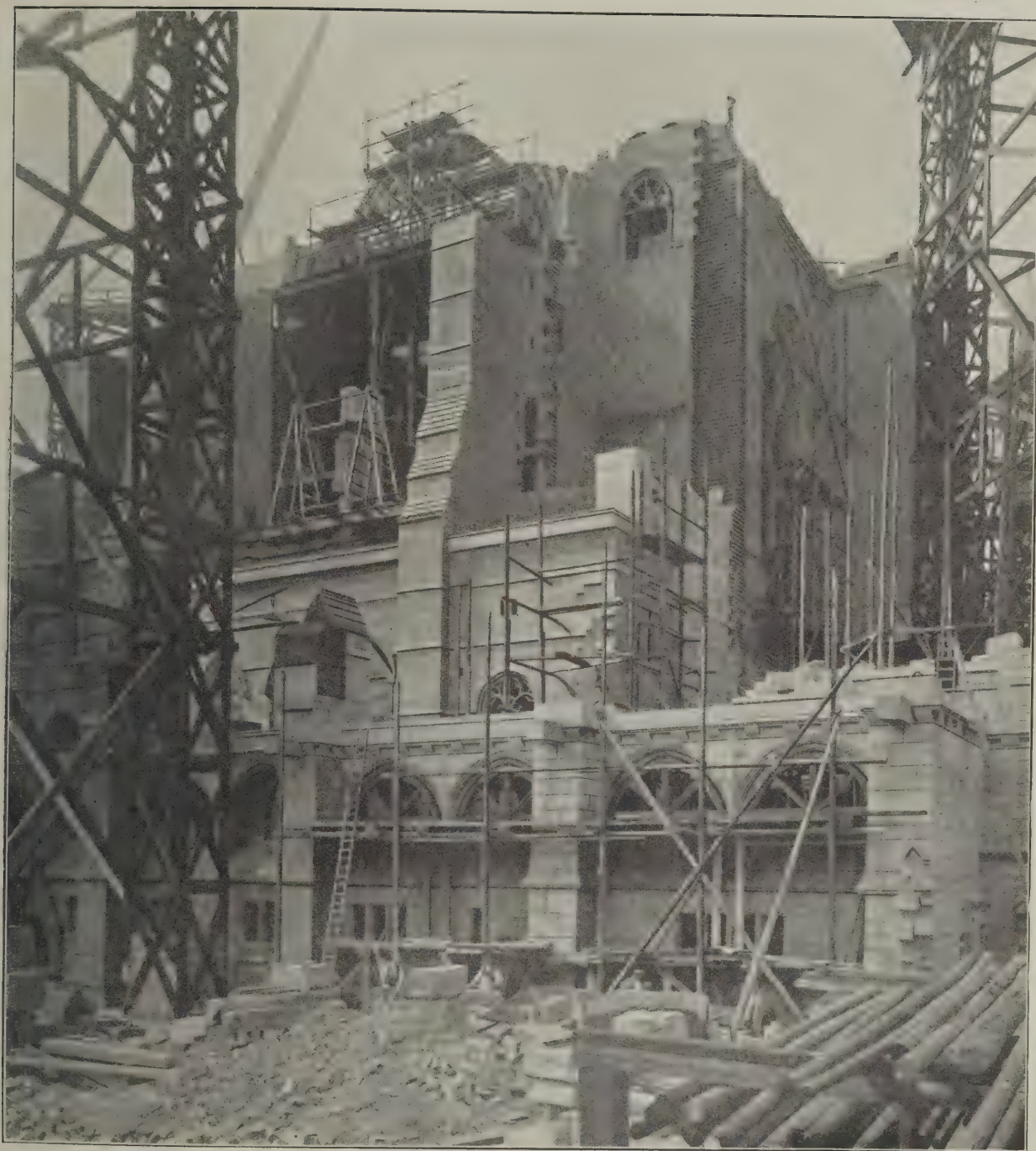
Each bay is covered with a barrel vault, divided into panels by ribs. The back of the vault will be treated with concrete, with asphalt over to form the roof. Between the bays, and overlooking the choir, the triforium will have carved tracery screens, from pier to pier of triforium arcades. The east window sill is 46 ft. from the floor level. The window takes nearly the whole of the east end from the sill, being 36 ft. wide from jamb to jamb, and from sill to apex of tracery 76 ft. in height. It is divided into four lights by a large central pier, and two small mullions. On the central pier are carved figures with canopies, in the apex of the window is a large circle 11 ft. 6 in. in diameter with cusps. Under the window there will be a red stone reredos. The organ will be on each side of the choir,

in the two western bays of the choir aisle. The roof of the choir is carried on walls built on the back of the four large transverse arches, and is of reinforced concrete covered with copper.

The outside of the choir has large buttresses, with plinth courses and weatherings. The faces of the buttresses are battered, and terminate in weathered gables, with pedestals on which are angels. On each side of the angels are pinnacles. The outside sills of the choir aisle windows are carried on a low arcade. Over the windows is a covered walking way, with arcade and tracery balustrade. At the east end of the north and south choir aisles rise square towers, which are surmounted by dwarf stone spires, the tops of which are 150 ft. from the floor level. The two towers are connected by a wall.



LIVERPOOL CATHEDRAL: VAULTING OF LADY CHAPEL, FROM BELOW.



LIVERPOOL CATHEDRAL: VIEW OF EAST END IN COURSE OF ERECTION.

ing-way immediately above the east window. Access to the walking-way and towers is by means of a spiral stair in the main east buttresses; a doorway through the east gable giving access to the space between the back of the choir vaulting and the roof of the choir.

On July 17th, 1906, the foundation-stone of the chapter-house was laid by H.R.H. the Duke of Connaught, with full masonic ritual. £10,000 has been provided by the Freemasons of the province of West Lancashire for building the chapter-house, in memory of the first Earl of Lathom. The chapter-house is on the north-east corner of the Cathedral, and is on plan an octagon rising from a square base; it is lighted by four two-light tracery windows, the sill of the windows being 13 ft. 3 in. from the floor level. On the mullions of the windows are four carved figures, with canopies.

A stone seat runs round the building, also a moulded and carved string immediately below the sill of the windows. The space between the seat and the string is 9 ft. 6 in., to be panelled in oak. From the blank sides springs the vaulting, which forms a square, then turns into a circle. The vaulting carries a walking-way, about the same level as the walking-way outside. Both inner and outer walking-ways have tracery balustrades. On the four blank sides inside are large coats-of-arms carved in stone. The turret on the north-east corner encloses a spiral stair, which leads to the walking-ways. The entrance to the stair is from the inside of the chapter-house. The floor is 2 ft. 6 in. above the nave floor level, and is to be paved with marble. Below the chapter-house, and on the level of the lower vestries, is the song school. The roof of the chapter-house will be of

reinforced concrete, covered with copper.

The vestries are on two floors. The lower vestries are at the same level as the Lady Chapel, and the upper vestries are 2 ft. 6 in. below the nave floor level. On the lower level there are several small vestries. In the centre is a large lobby, from which a doorway gives access to the courtyard. In the ceiling of the lobby are two large English oak moulded beams, which carry the floor above. A passage-way, with oak-panelled ceiling, connects the Lady Chapel and the song school. This passage gives access also to the vestries. There is a low arcade of three arches at the entrance to the lobby. The upper vestries are for bishops, deans, and canons. These vestries also have large English oak moulded beams in the ceilings, which carry the roof above. On three sides the vestries are panelled in English oak. On the fourth side are

windows. All the doors are of English oak. On the outside wall of the vestries are six buttresses, 4 ft. wide, finished at the top with weathered gables. Large blocks of stone are placed at the top of the buttresses, on which will be carved groups of figures. Between the buttresses and lighting the lower vestries are a series of three-light square-headed windows without cusps. The windows lighting the upper vestries are of four lights, with tracery heads. They are deeply recessed, with weathered sill, and having a curtain arch outside. The height from the courtyard to the top of the parapet is 25 ft. The roofs of the vestries are covered with copper.

The stones used for the building of the Cathedral are local red sandstones, from the quarries at Woolton, Runcorn, and Rainhill. The Woolton stone is used for all work exposed to the weather. The three stones are used mixed together inside the building, Woolton or Runcorn being used where heavy weights occur. Throughout the building the thickness of the mortar between the beds and joints of the stones is $\frac{1}{2}$ in. The advantage of using half-inch beds is, that a stone can be put on to an inch of mortar and driven down until the bed is half-inch, thus ensuring that the stone shall be solidly bedded. With thin beds and moderately large stones, it is almost impossible to make them solid, as the sandstone

quickly absorbs the moisture in the mortar, and consequently a solid bed is not assured. With half-inch joints, moreover, the cement grout has room to run in and fill the joint solidly. With tight joints the grout cannot fill the joints. The whole of the joints throughout are arris-joggled. The mortar is composed of Clitheroe lime and ashes, ground in a mill. All the joints are raked out as the work proceeds, and are pointed at completion with grey mortar, which brings out the lines of construction very clearly. The stone used for steps and landings is red Wilderness stone from the Forest of Dean. The walls are filled in between the stones with Ravenhead bricks, from St. Helens.

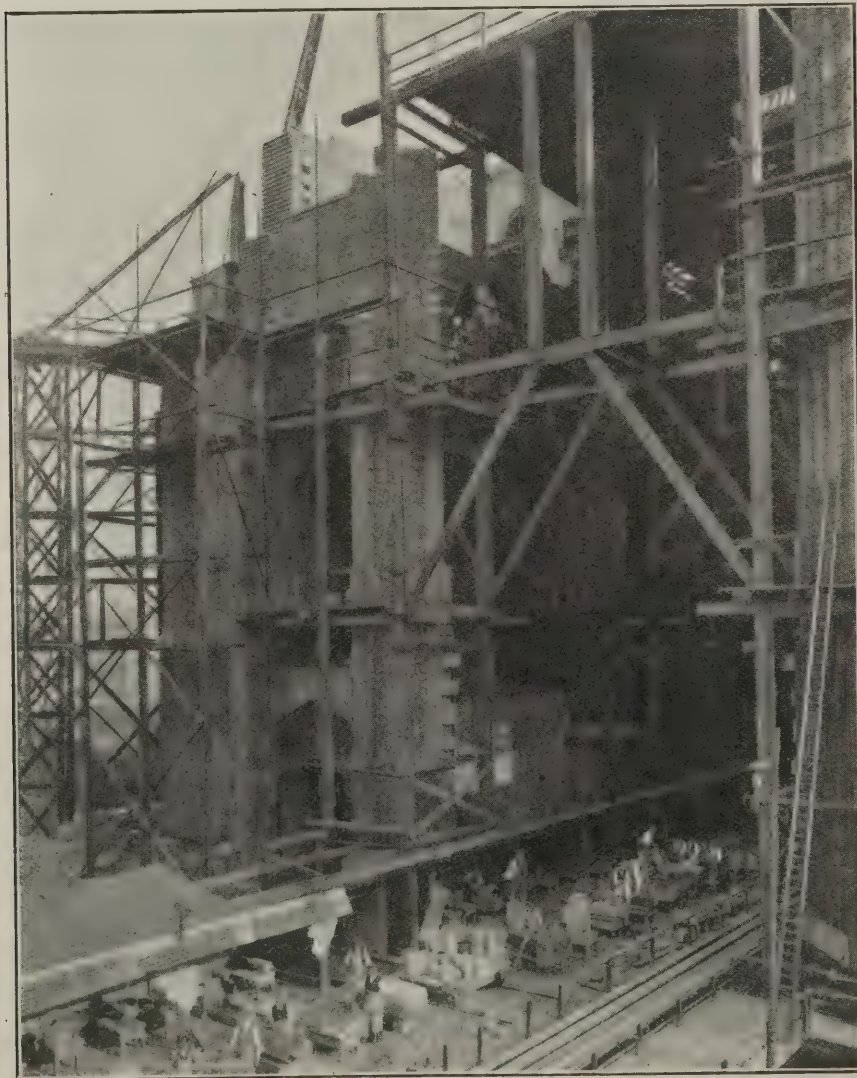
The plant and scaffolding are not without interest. At the west end of the site are three frame saws for sawing stone. A five-ton crane travels the whole length of the frames, and unloads the blocks of stone as they are brought to the site by teams of horses on lorries. This crane also lifts the blocks of stone on to the trucks which pass under the saws to be cut to the required sizes. This being done, the crane again lifts out the sawn stone, and places it ready for the four-ton travelling crane, which runs down the centre of the site as far as the east wall of the Cathedral, to distribute it to the masons, to be cut into shape for the various parts of the building. A long line

of masons' sheds runs parallel to this track, in which about 80 masons are busily engaged shaping the stones into ashlar, quoins, jambs, archstones, tracery, canopies, etc. On an average about 100 masons are engaged; the remaining 20 are working out on the building. There is a board on which to set out the work the full size required, and on which the zinc templates are made for the masons to shape their stones by. This board takes up the whole of a shed measuring 50 ft. by 50 ft. On the site are six derrick cranes, one at the east end, one on the north side, two at the west end, and two at the south side. These cranes are 130 ft. high, built on timber cages, having iron lattice jibs, varying from 70 ft. to 100 ft. long. They command the whole of the building, and lift up the worked stone to the mason fixer, who then builds it permanently into the place appointed for it. The whole of the plant is driven by electricity, the power being taken from the corporation mains. The scaffolds are built mainly of 12 in. by 12 in. pitch-pine logs, varying in length from 20 ft. to 60 ft. The logs not only form the scaffold, but are so arranged that they act as supports to the centres on which the arcade arches were built, continuing upwards to support the centres on which the transverse arches and vaulting are carried. The scaffold outside the east window is carried on two large steel girders bolted together, and let into the buttress on each side of the east window—just clear of the ambulatory roof. Ample messrooms are provided for the workmen. A large pavilion, which will accommodate 200 men, is built on the site, in which the men's services are held on each Tuesday, during their dinner-hour. A lay reader works amongst the men, and on the first Tuesday in each year since the Lady Chapel was opened the Lord Bishop of Liverpool has addressed the workmen in the Lady Chapel. The average number of workmen employed for the Cathedral is about 220.

The Lady Chapel is illustrated on the Centre Plate in this issue.

The design of the Cathedral was amended a little over 12 months ago, and in place of the two transept towers there is to be one large central tower, rising to a height of 280 ft. The transepts remain, and will act as buttresses to the east side of the central tower. Two other transepts will be built to buttress the west side of the central tower, as the work is extended. The amendment of the design is entirely Mr. Scott's own idea and has met with the approval of the committee. The committee require £70,000 to complete the choir and the eastern transepts. As regards the style of architecture, Mr. W. Horsfield may be quoted. He says: "As to the style, it is difficult to speak. Gothic in the large sense of the word—but not to be confounded with any particular one of the tabulated styles. It shows familiarity with and study of ancient forms, but it is no diatessaron of undigested parts collected at haphazard fancy and flung together in the mode of the Gothic Revival and spoken of as of this or that particular period or century. It is modern of the twentieth century—of to-day—thoroughly digested, and has been tied by no style, and an example of living modern architecture as applied to a religious problem—religion, from whom the art of architecture had its being, for whom it was invented and developed. Modern method facing and solving an ancient problem."

(To be concluded.)



LIVERPOOL CATHEDRAL: CHOIR AND CHOIR AISLE LOOKING EAST.

THE PLANNING AND DEVELOPMENT OF A GARDEN SUBURB.*

BY MICHAEL BUNNEY, A.R.I.B.A.

It has been complained that, generally speaking, papers on town planning tend to overmuch theorising. The paper here printed, while paying due attention to the elucidation of principles, is rather exceptional in its happy blending of theory and practice, and it therefore possesses unusual value from the professional point of view.

THE Victorian Era was remarkable for many social movements, and the expansion which took place in towns was extraordinary, not only for its great extent, but in the fact that practically the whole of this expansion was, so far as its planning was concerned, haphazard, and without direction. Vast tracts of land around all our most important cities were covered within the last seventy years with thousands upon thousands of houses, most of them on roads laid out with little or no regard either to the general interests of the town or to the particular interests of the people who were to live in the houses.

The Beginnings of Town Development.

In the earlier part of this period of expansion the ignorance or neglect of the most primitive principles of public health were too often a strong element in the methods employed, and the consequent reaction upon the health and on the social and material status of the inhabitants, and the ill-regulated and insanitary conditions which prevailed, drew the attention of sanitary reformers. This resulted in the passing of the Public Health Act and sundry Building Acts, and upon these laws and the succeeding extensive passing of by-laws regulating building operations and street-making, the bulk of town development has, until recent years, depended.

Admirable as much of this law-making was from a sanitary point of view—and the early by-laws and regulations as to streets did make the work of local government simple and orderly—they still set a standard too inelastic and unsympathetic—their fault lay in their being too well framed, too little wanting constant amendment, that helpful hand to progress. The result has been that the standard of the 'seventies remains to all intents and purposes the standard of to-day.

It was characteristic perhaps of our national methods that we should have begun our reform at the bottom by setting right the details, and setting them right presumably for all time, before we understood or even conceived of the governing principles.

The Revival in Domestic Work.

Side by side with this municipal direction some wider public interest was being aroused—an undefined desire arose to improve the dreary monotony of our suburbs—domestic architecture was undergoing a change which is destined to stamp our time with a revival in building second to none in our architectural history. The mind of the house-designer was grappling with the application of traditional methods to the small living house.

Mr. Norman Shaw began by handling the problem of the small house on entirely new lines—he broke away from the typical plan, plotting, and general arrangement of the stucco villa, and at Bedford Park created a piece of housing reform in its widest sense, the influence of which on this movement is being, I am afraid,

somewhat lost sight of. Excellence and practicability of plan, the use of simple and local materials undisguised under coats of paint and stucco, and carefully thought out and balanced colour schemes,—these were some of the qualities successfully utilised at Bedford Park.

The speculative builder could not afford to ignore them, and imitated them as best he could—not very well, it must be admitted—but his worst effort was a thing as unlike the old accepted idea of the small house as is Willesden from Gidea Park.

The result upon public taste was instant. Beside this, and synchronising with it, was the rapid advance in sanitation, both public and domestic. While Norman Shaw was forming a new school of architectural thought, Rogers Field was working out the modern sanitary scheme from the nightmares of early Victorian times, and the giants of our main drainage and bacteriological systems were making the scientific treatment of city waste a thing assured.

Thus while every detail of the healthful housing of the people was advancing under the pressure of professional application, and whilst the restless thinking of the social reformer was being slowly focussed upon some great principle which he could apply to co-ordinate the whole for a real advance, the general movement in town planning was to come after and not before the elaboration of the parts that go to make it possible.

Our practical mind is shy of the theoretical side of any question, and it was presumably on this account that the well-worked-out theories of the German town planners and their practical application extending back for some years escaped attention until the issue of Mr. Horsfall's book in 1904—Mr. Ebenezer Howard, it is true, had previously issued his well-known "Garden Cities of To-morrow," an inspiring, yet, in the main, theoretical treatise. Mr. Horsfall, however, clearly showed how successful German municipalities had been in applying their town planning powers, and in declining to allow urban extensions to be carried out without some substantial measure of agreement as to how they were not only to be planned, but also their probable effect on public as opposed to private interests.

Bournville, Port Sunlight, Letchworth.

Meanwhile, the pioneer efforts at Bournville, Port Sunlight, and Letchworth drew attention to the possibilities inherent in the new movement.

Letchworth.—Rigidly based, so far as natural features and accidents of purchase allowed, on Howard's theories—the garden city self-contained and unattached, supposed to provide for every class of resident with its own industries and industrial population, eventually fully and already partially self-governing—supplying all its own municipal services—the few of its dwellers who happen to be London daily workers are purely accidental, and not necessary to its civic completeness.

Port Sunlight.—A housing department for one particular firm's own employees,

living under the constant and semi-paternal care of the owners, who retain their interest and exercise effective control—philanthropic, purely in the sense that it cannot pay a commercial return except in the added efficiency of the worker—part of a settled policy of housing, of high wages, of facilities for recreation, and the putting into practice of the finest principles of industrialism, and, intentionally or unintentionally, a brilliant piece of advertising.

Bournville.—Also inspired by a desire to better the lives of the workpeople of the promoting firm—governed by trustees independent more or less of the promoting firm, and the accommodation not wholly restricted, as at Port Sunlight, to workers for the firm. The result is much less control, a greater approximation to normal conditions of social life, and therefore in every way a more practical experiment.

All these three types were in the nature of propagandist work. They were examples set up for a dual purpose, the direct one of teaching an object-lesson in housing reform and the indirect one of demonstrating the value of town planning control. Excellently, however, as they served these purposes, enterprises on these lines are bound to be isolated, insufficient in number to do more than point the way, and in one at least of the three types so purely philanthropic in character as to go beyond the regions of business altogether.

Business Basis Essential.

Now we may be specially sympathetic as a nation towards experiments for bettering the people, even at costs which seem disproportionate to the good results obtained; but, after all, no reform or progressive movement of this nature is likely to take firm hold until it can prove its possibilities for being worked on a business basis; by that I mean a basis that will return at least a moderate dividend on invested money and a fair remuneration to those engaged in doing the work.

For the aims of the movement are wider than the purely theoretical ones confined to such abstract principles of town planning as the city development plan, city improvements, architecture, and its relation to civic ornamentation, treatment of open spaces, etc. These matters, of course, have their place and function even in the most practical considerations of suburb development, but the movement finally depends on the business issues of cheap, attractive, and better houses, of their relation in numbers to the given area, of the economies which a more sensible treatment of the road-making problem will make possible, and on the raising, not only of the standard of comfort, but of the standard of taste that the town planning movement will push forward to an early and sure realisation. . . . Certainly there is nothing in which people have shown a greater aptitude for education during the last ten years than in the hygienic way of living, and this it is the present aim of the town planner first and foremost to foster.

Garden City and Garden Suburb.

Many apply the title "Garden City" to garden suburbs, and it would be well to clear up this little point before we go further into the details of garden suburb development. The term garden city involves an element that shall be self-contained; it describes a community independent, yet interdependent.

*Extracts from a paper read before the Institute of Sanitary Engineers, January 8th.

with its own sources of livelihood, factories, industries, and industrial community, common government, common ownership of public utilities—in fact, a town in itself. To all intents and purposes this is what Letchworth aspires to be and is rapidly becoming. On the other hand, the suburb is what the word implies: it is secondary to and an appanage of the city, and may vary in size from a whole administrative area of local government like, say, Croydon, to a congeries of a few streets like some of the small garden suburbs at Harborne, near Birmingham, or those in the outskirts of Warrington. The Hampstead Garden Suburb, for instance, is but a small portion of the Hendon district; it uses all the municipal services supplied by the Council, and takes its part fully in the local life of the whole. But even the suburb can have its civic centre, subsidiary, it is true, to the town centre, yet still a replica in miniature of the greater gathering-place of social and commercial activities. To this civic centre will be brought such public institutions as may be convenient—the places of worship, possibly the schools, clubs, and meeting places for social, recreational, and educative means. But the garden suburb will be primarily residential.

Forming a Garden Suburb.

Let us suppose that the estate we propose to convert into a garden suburb is the property of a single owner or an association of owners syndicated for the purpose, with capital available or arranged for, and a competent surveying staff already in the saddle. Some advice will have presumably been taken on broad lines as to the suitability of the land for the purpose, and as to the financial possibilities of the scheme. The first practical piece of work to be done will be the collection of such data as will enable a properly planned scheme to be prepared, and for this purpose the R.I.B.A. have already drawn up valuable suggestions.

A fully detailed survey must be made. Not only is it necessary to measure and plot the whole of the land, but levels must be shown by means of contour lines at least at every 10 ft., and preferably at every 5 ft. All physical features and trees, hedges, water-courses carefully plotted, and notes made of such a nature that the fullest possible information will be readily available to the site planner. Information must be collected and analysed as to the social and economic condition of the population likely to be attracted, as to the history of the development of the adjacent or related developments; as to buildings and other material survivals, or traditional associations worthy of preservation as tending to carry on the individuality of the district, and, finally, a complete record of social, educational, and municipal services available. Much of this information can be made available by means of diagrams or maps specially annotated and coloured; in fact, in the case of small estates, all these data can be placed upon the survey plan, which will be found most useful if worked out to the scale of 25 in. Ordnance maps.

On most estates also there are special views or standpoints, the character of which is worth preserving, and it is advisable for this purpose to have photographs taken recording these.

Preparing the Development Plan.

As soon as this information is collected, analysed, and reduced to summary and plan, two methods of dealing with

the next steps present themselves. The first is to employ the services of a town planner, be he architect or surveyor, or both, of some repute, and capable to prepare a satisfactory development plan under the direct instructions of the promoters. Needless to say, this method wholly depends for its success on the capabilities of the planner.

The second method, which, in the present stages of the movement, the author considers the better, is to promote an open or limited competition. For this purpose some well-known town planner, preferably again an architect, should be appointed to act as judge or assessor, and be empowered to draw up a schedule of conditions under which the competition is to be carried through in consultation with the promoters and their professional adviser.

The method of open competition, notwithstanding some faults, has the great merit of unearthing latent talent, and incidentally widens the area of interest and experience among the competitors, and thus helps generally to promote the movement. It also provides an object-lesson to the public, and a means of education, especially if the designs are publicly exhibited, with the opportunities afforded by the public exhibition for local conferences and lectures upon the principles involved. All this publicity is invaluable to the promoters in advertising the new development and arousing interest among house-hunters and others, who may eventually be attracted to the estate for residential purposes.

The Act confers the power to suspend, as far as may be necessary for the proper carrying out of the scheme, any statutory enactments, by-laws, regulations, or other provisions, under whatever authority made, which are in operation in the area included in the scheme, and will enable, therefore, the adoption of an economical construction of roads of varying types suited to the requirements of the traffic likely to pass over them, and of the type of houses abutting upon them.

Roadmaking.

By-law roads of a uniform width of 40 ft. or 50 ft., with expensive formation with elaborately paved footpaths, kerbed and channelled irrespective of the work they have to do, and their construction regulated more by the eventual cost of maintenance than by the effect on development of their heavy initial cost—these have been one of the material causes of the methods of development we all deplore, with its skimpy-fronted plots and large number of houses to the acre. The small house or cottage builder has been forced to cover this initial road-making cost by cutting down his plots and the accommodation of his houses, and to crowd the land to its utmost extent. Under the Act there is little doubt that a very great modification in roadmaking will be allowed. In fact, the roads—some of them were carriage drives, which have stood the test of three years' traffic at the Hampstead Garden Suburb, and were constructed under the special Act of Parliament obtained in 1906 by the Hampstead Garden Suburb Trust—will be taken as bases for further work, and will in all probability be sanctioned by the Local Government Board.

Where in residential districts the only traffic to be provided for is the tradesman's cart and the occasional taxi-cab, a well-made carriage-way of 16 ft. or even 13 ft. in width will be found ample. The footway can even be dispensed with altogether where the larger drive is

provided, and the total road width of 26 ft. made up by grass margins; at any rate, a 26 ft. road, 16 ft. carriage-way, with two footpaths of 5 ft. each, should be ample for any purely residential traffic of this kind. Two provisions alone must follow, and be insisted on when this method of roadmaking is adopted, and these are that the land so saved *must* not be clipped from the plots, and the building lines *must* be kept at least 50 ft. or 60 ft. apart.

But this does not end the advantages which a saving on the cost of roadmaking allows; greater frontages can be given with the consequent opportunities for the more sensible planning of the houses, for greater spaces all round the houses, and for a general resultant effect of openness and light and air.

Method of Plotting.

So much for roadmaking. Next in importance comes the method to be adopted in respect of plotting, the fixing of the building area in relation to the size and aspect of the plot, and the grouping of the houses. The site planner will to a large extent have borne this point in mind in making his plan. He will have arranged for buildings to form road terminals, and thus close what might otherwise form a too extended and monotonous view, for some treatment of studied arrangement when awkward corners had to be turned, and round his open spaces will have suggested a plotting which will secure to the maximum number of houses some outlook upon open ground. Trees and hedges, again, will have influenced the plotting, so that as many as possible of these physical features should be preserved from destruction, and the exigencies of varying levels will not have been neglected.

If the estate managers are in a position to plan out the plotting from the commencement, and substantially adhere to this once it is decided on, as may be the case on estates, or portions of estates, wholly dealt with by the building owners—such, for instance, as the Co-partnership Tenants' Societies—a prearranged scheme not only of grouping out of the types of architecture to be allowed, the materials to be used, roof and eaves levels, etc., can be insisted on. This is not quite so easily done where the owner proposes to dispose of plots as and when the demand comes along, though even in this case a scheme of grouping, etc., can be prearranged to a certain extent. Much diplomacy and tact, however, are required to get it carried through successfully and willingly accepted by plot-holders; though it is surprising how far a little suggestive conversation, a patient explanation of the ideals aimed at by the promoters, goes in bringing round a stubborn inquirer who *will* have his house his castle, and that as different from his neighbours' as it can by hook or crook be made in size, plan, elevation, materials, and position. Where a plotting plan can be made and adhered to, it is best drawn out to a scale of 1/500, or 41.66 ft. to the inch, as on this scale can be shown every detail which must be made clear to the plot purchaser, the particulars of the type of house and the materials, information as to any prearranged form of boundary treatment, fencing or hedging, the positions of the soil and surface-water sewer connections, of the water-ferrules and the gas and electric connections; and if the roadmaking charges—that is to say, the estimated cost which each plot-holder will be liable for on the local authority taking over the roads—

can be pooled over the whole estate and allocated definitely to each plot, and the amount duly marked on the plan, many disputes and recriminations with the sales department are thereby avoided.

Points in Plotting.

A successful scheme of plotting must include an adequate provision of houses grouped together, either semi-detached or in blocks of up to six in number. Though most of us prefer to live in a detached house, there is no question but that, from an architectural point of view, an estate covered entirely or principally with detached houses, especially if these be small in size, is a difficult one to treat successfully. The attached house, if a proper archway or back road be provided for access to the back gardens, or for purposes of drainage, has many advantages; it is warm, it is economical to build, and it requires less frontage, thereby releasing more land for open spaces—in fact, the arrangements of plots and building areas to produce an ordered result must be governed by other considerations than that of obtaining the maximum number of selling plots. The town planner must foresee what effect the general mass of his buildings will produce, and vary the street picture by judicious settings forward or backward of his building lines. He must change now and then the spacing of his building areas, and in long roads definitely group the houses in compartments so as to confine the street effect to no more than the eye can comfortably take in. In short, plotting for a garden suburb becomes subsidiary to and bears constant relation to the arrangement of the buildings, and the difficulty of the problem lies in the blending of an economical and practicable plot plan with the architectural grouping of the houses to be built upon it. It is a problem that must be faced throughout, at every road junction, whenever the vista or the terminal are desired, at curves, round greens and squares, where buildings are to abut on large open spaces, and where fine trees or hedges must at all costs be preserved and made to harmonise with the scheme.

The treatment of boundaries also requires consideration at an early stage, and a comprehensive scheme for this worked out and enforced—simple treatments of posts and chains, with a hedge behind of privet, yew, or holly, or wide-mesh oak trellis, with openings 6 in. square or so, and with Penzance briars, or cheap climbing roses tied to the trellis, or again the cheery Rosa Rugosa behind a low brick curb wall—all are really less expensive than the dwarf wall, its stone coping and cast-iron rails, or the park pale fence so dear to the speculative builder.

Building Regulations.

As soon as the roads are in hand, and the plot, plan, and building areas decided upon, building operations will begin, and here it is essential that proper control be exercised from the start.

Building regulations of a much more comprehensive character than those usually tucked away in the recesses of building agreements are required. They should be framed in such a way as to disarm the prejudice and quiet the alarms of the enquirer, for the man, especially the small man, who is about to build a house is a nervous individual.

The author had found little or no difficulty in tuning up materials and building construction to a level, generally speaking, well above that of the usual by-law requirements, and such items as

1½ in. grooved and tongued floor-boards, and oak or teak window sills, have been cheerfully agreed to even by the usual type of speculative builder. At the same time, recommendations to consider that most buildings on a garden suburb will be seen all round and should be treated

accordingly, and with the minimum of unsightly outbuilding behind, suggestions as to type and colour of materials required in given areas, as well as the discouragement of the use of materials in imitation of others, have been received and acted on with evident appreciation.



REGINALD T. LONGDEN, ARCHITECT.

This block of offices, now in course of erection on a site opposite the King's Hall, Stoke-on-Trent, is to be styled "St. George's Chambers." The outer facings are of brick, with dressings of Alderley stone, and the roof is of green Westmorland slates. The three lower floors will be fitted as offices, and the upper two as warehouses. The architect is Mr. Reginald T. Longden, of Stoke, Burslem, and Leek, and the general contractors are Messrs. Willcock and Co., of Wolverhampton.

REGISTRATION OF ARCHITECTS: THE TRANSVAAL BILL.

In view of the fact that at present the Institutes of Architects in South Africa are considering a Draft Bill for Registration to apply to the whole of the Union, the Editor of "The African Architect" produces, in his first number, the Transvaal enactment, which he understands to be the working model of the South African measure. It is perhaps of less direct value in our own country, but will nevertheless be read with interest for any light it may be assumed to shed on the Registration movement that the Royal Institute and the Society of Architects have in hand.

WHEREAS it is expedient to provide for the registration of persons publicly practising or entitled to practise publicly as architects in the Transvaal, so as to distinguish qualified from unqualified persons:

And whereas it is necessary to provide a qualification for admission to the Register of Architects;

Be it enacted by the King's Most Excellent Majesty by and with the advice and consent of the Legislative Council and Legislative Assembly of the Transvaal as follows:—

Use of Title of Architect Restricted.

1. After the expiration of six months from the coming into operation of this Act no person shall describe or hold himself out as an architect or use any name, title, addition, or description, or letters indicating that he is an architect, whether by advertisement, by description in or at his place of business, or residence, by any document, or otherwise, unless he is registered as an architect in pursuance of this Act.

Penalty for Infringement.

2. Any person contravening any of the provisions of section one hereof shall be liable to a fine not exceeding one hundred pounds for each offence and in default of payment to imprisonment for a period not exceeding six months.

Association of Transvaal Architects.

3. Upon the coming into operation of this Act there shall come into existence a body corporate by the name of "The Association of Transvaal Architects" with perpetual succession and the right to use a common seal and to sue and be sued in its corporate capacity, and the said body corporate shall be capable in law of taking and holding any movable or immovable property for the benefit and purposes of the association with power to dispose thereof, but so that the association shall apply its funds and assets in promoting the objects of the association and shall not at any time pay any dividend to its members. Every person registered as an architect as hereinafter provided shall upon such registration *ipso facto* become a member of the said association.

Appointment of the Provisional Council.

4. Upon the coming into operation of this Act there shall come into existence a provisional council consisting of the following persons—namely: Walter Reid, F.R.I.B.A.; Herbert Baker, F.R.I.B.A.; G. A. H. Dickson, F.R.I.B.A.; Frank Emley, F.R.I.B.A.; Archer Hosking, A.R.I.B.A.; W. H. Stucke, A.R.I.B.A.; Harry Clayton, M.S.A.; J. F. Beardwood, M.S.A.; R. Howden, A.R.V.I.A., M.S.A.; G. H. Veale; F. G. McIntosh; W. J. de Zwaan; G. St. J. Cottrill; who shall be the first members of the association of Transvaal architects and shall forthwith cause their names to be entered upon the register thereof. The pro-

visional council shall, subject to the provisions of this Act, exercise all the powers of the association until the council hereinafter mentioned shall come into office.

Should any of the said persons die or become incapacitated, or refuse to become or remain members of the said provisional council, the Governor-in-Council may appoint other qualified persons in their place.

Proceedings of the Provisional Council.

5. Upon a day to be fixed by the President of the Transvaal Institute of Architects, but not later than one month from the coming into operation of this Act, the provisional council shall meet at Johannesburg and shall at such meeting elect a president. In the absence of the president at any meeting the members of the provisional council present shall elect one of their number to preside.

At any meeting of the provisional council five members personally present shall constitute a quorum, and a majority of the members present shall decide every question to be decided by such meeting, except admission to the register, on which a majority of the whole council shall vote, and fourteen days' notice shall be given of all meetings at which the admission of members is to be dealt with.

Subject to the provisions of this Act the provisional council are hereby empowered to regulate their meetings and the proceedings thereat and the mode of carrying on the business of the association and shall remain in office until six months after the date of the coming into operation of this Act.

The provisional council shall have power to appoint a clerk or registrar and such other officers as they may deem necessary for the purpose of the association.

Persons Entitled to be Registered by the Provisional Council.

6. The provisional council shall forthwith open a register in which any person shall be entitled to be registered as an architect in pursuance of this Act who proves to the satisfaction of the provisional council within six months next after the coming into operation of this Act that at the date of the coming into operation of this Act he was resident in British South Africa, and

(a) was a member of the Transvaal Institute of Architects or of any other institute or society; or of architects of equal standing; or

(b) was publicly and *bona fide* practising as an architect in the Transvaal; or

(c) was at such aforesaid time, or prior to the coming into operation of this Act, engaged as an assistant to an architect in the Transvaal and has had at least seven years' professional experience; or

(d) that he is possessed of qualifications and experience which may be

declared by the Governor-in-Council by proclamation to be equal to those in one or other of the foregoing instances.

Persons Entitled to be Registered by the Council.

7. Upon the expiration of six months from the date of the coming into operation of this Act no person shall be entitled to be registered in the said register as an architect unless he shall prove to the satisfaction of the majority of the whole council hereinafter mentioned that at the date of his application for registration he is resident in British South Africa and has attained the age of twenty-one years; and

(a) has passed the examination for associateship of the Royal Institute of British Architects or the examination for membership of the Society of Architects of London or the examination or examinations conducted by the council and prescribed by the by-laws of the association or some other examination which may be declared by the Governor-in-Council by proclamation to be equivalent to one or any of these examinations, and has in addition had at least four years' professional and practical experience as an assistant to an architect; or

(b) that prior to, or at the time of, the coming into operation of this Act he was registered as an associate or fellow of the Royal Institute of British Architects of London or the Transvaal Institute of Architects or of some other society or institute of architects which the Governor-in-Council may by proclamation declare to be of a standing equal to that of one of the said institutions.

Applicant Refused by Council may Apply to Supreme Court.

8. Where the council has refused to register the name of a person applying to be registered under sections six and seven, such person may apply on notice of motion to the Supreme Court for a review of the decision of the council, and the said Court may thereupon make such order as it may deem fit.

Register.

9. The provisional council or the council, as the case may be, shall, within a week after the registration of any person under this Act, transmit to the Colonial Secretary a duplicate of the said entry and the Colonial Secretary shall cause a duplicate of the aforesaid register to be kept in his office. Every change affecting the Register shall be noted therein and notified to the Colonial Secretary.

Registration Fees.

10. No person shall be placed upon the register until he has paid such registration fee, not exceeding five guineas, as shall be fixed by the provisional council or the council, as the case may be.

Resignation by Members.

11. It shall be lawful for any person whose name has been placed on the said register and whose professional conduct is not then the subject of investigation at any time to resign by writing under his hand addressed and delivered to the council and thereupon his name shall be removed from the said register and he shall cease to be registered as an architect and to be a member of the association.

Annual Subscription.

12. Every member of the association shall pay an annual subscription at such time and of such amount as shall be fixed by the by-laws framed as hereinafter provided, provided however that members who have ceased to practise shall be

entitled to remain on the register without being liable to pay such subscription but shall not be entitled to be officers of the association or to be present or vote at any of the proceedings of the association or to be reckoned in any quorum unless they shall have paid such subscription.

Recovery of Subscription.

13. All sums of money due by members to the association for registration fees or subscriptions may be recovered in the court of any resident magistrate within whose jurisdiction the debtor may reside. An affidavit by the secretary setting forth the necessary facts shall, in cases by default, be *prima facie* evidence upon which the court may grant an order or pronounce judgment by default in such suit and such judgment shall be enforceable in ordinary course of law.

Election of the Council.

14. On such day during the currency of the sixth month next after the date of the coming into operation of this Act as the provisional council shall appoint they shall convene a meeting in Johannesburg of all persons whose names appear upon the register at the date on which the notices convening such meeting are issued, such notices to be posted to the registered address of such persons at least fourteen days before the date fixed for the said meeting, and at such meeting the persons present or represented by proxy in writing shall proceed to elect in manner to be provided by the provisional council a council of twelve members who shall come into office upon the expiration of six months from the date of the coming into operation of this Act and thereupon the provisional council shall hold office until the date of the first or next council meeting as the case may be when they shall retire from office.

Offences.

15. The following acts and practices, whether of commission or omission, upon the part of any architect shall be offences under the provisions of this Act and, if found guilty by the Supreme Court of having committed or engaged in any one or more of such acts or practices, such architect shall be liable to be suspended from practice for any period that may be decided on by the said Court or to have his name removed from the register as hereinafter provided; that is to say:—

(a) allowing any person except a registered architect in partnership with himself to practise in his name as an architect;

(b) directly or indirectly sharing his professional remuneration with any person, not being a registered architect in partnership with him, or directly or indirectly accepting any share of the professional remuneration of such person or any commission or bonus thereon;

(c) signing accounts, statements, reports, specifications, plans, or other documents purporting to represent any architectural work performed by himself which work shall not have been performed under his personal supervision or direction;

(d) directly or indirectly paying a person a commission for bringing him work, giving any person monetary or other consideration as a remuneration for bringing him work, or for inducing other persons to give him work;

(e) touting or otherwise improperly obtaining or attempting to obtain work;

(f) performing any architectural work in connection with any matter which is the subject of dispute or litigation upon condition that only in the event

of the said dispute or litigation ending favourably for the party for whom the work is performed shall payment be made for such work;

(g) conducting himself unprofessionally or dishonourably in connection with any work performed by him as an architect;

(h) wilfully disobeying, refusing, or neglecting to carry out and perform any by-law or order lawfully adopted and established by the association regarding any point of professional practice;

(i) engaging in any practices or performing any acts similar to those acts and practices prohibited in the foregoing sections.

Enquiries into Conduct of Members.

16. If the conduct or behaviour of a member of the association shall appear to the provisional council or the council to require investigation, they shall before proceeding against such member in the Supreme Court as provided in the next succeeding section, hold an enquiry and, if required by such member, hear evidence on the matter. Eight days' written notice of the charges against him and of the date of such enquiry shall be given to the member concerned, who shall be entitled to appear at such enquiry to answer such charges and to produce evidence on his behalf, and his own evidence (if any) shall be admissible against him in any other proceedings, civil or criminal. If such member requires evidence to be heard the provisional council may also hear evidence against such member. Where evidence is to be heard the president or vice-president may administer the oath to witnesses and such witnesses shall be subject to the law relating to perjury.

Proceedings for Suspension and Removal of Members.

17. In the event of any member of the association being in the opinion of the provisional council or council guilty of any act or omission prohibited by this Act, or offending against any by-law or regulation framed thereunder, the provisional council or the council may call upon such member to show cause to the Supreme Court of this Colony why he should not be prohibited from practising as an architect, and why his name should not be removed from the register. All such proceedings shall be taken in the name of the association. Upon the hearing of any such matter the Court may suspend such member from practice, remove his name from the register or make such order as may seem fit, and may further make such order as to costs as may seem fit. In case of such suspension or removal, copies of the order of Court shall be lodged with the Colonial Secretary and the associations and noted in the register.

Penalties.

18. In the case any member of the association shall in consequence of an order of Court be suspended from practising as an architect in this Colony, such person shall, during such time as he is suspended, cease to be a member of the association, but shall nevertheless be liable to pay all moneys due by him up to the date of such suspension.

Persons having no Claim against the Assets of the Association.

19. No claim against the assets of the association shall exist in the case of, or be made by any person whose name has ceased to appear upon the register of the association.

Titles allowed to Members of the Association.

20. Every person whose name appears on the register shall be entitled to style himself "Registered Architect, Transvaal."

Rules and Regulations for Examinations.

21. The council shall, upon being elected to office, forthwith frame rules and regulations for regulating the examinations or equivalents thereto which shall be required of applicants for registration under section seven of this Act.

Powers of the Council.

22. The council shall have power to do each and all the following Acts:—

(a) to manage and superintend the affairs of the association;

(b) to appoint and remove any servants of the association and to determine the duty, salary, and remuneration of the same;

(c) to accept or refuse for good cause any application for registration made in pursuance of this Act;

(d) to hold examinations for applicants for registration and to grant certificates to such persons as have satisfied the examiners in such examinations;

(e) generally to exercise all the powers of the association, except such powers as are expressly reserved by this Act to the association in general meeting.

Persons in Arrear with Subscriptions not Qualified to Vote.

23. No person who is in arrear with his subscription shall be qualified to be present or vote or be reckoned in a quorum at any meeting of the provisional council or council, or of members, while he is so in arrear.

General Meetings.

24. There shall be held once in each year a general meeting of the association whereat every architect upon the register who is not disqualified under section twelve hereof shall be entitled to vote personally or by proxy in writing. The quorum for such general meeting shall be fixed by the by-laws.

Any question to be decided at such meeting shall be decided by a majority of the members present or represented thereat.

The council shall prepare as at the thirty-first of December in each year a balance-sheet of the affairs of the association and an account of all moneys received and expended by the association and submit such account duly audited to the association at such general meeting for discussion and approval. The officers of the association who shall consist of the members of the council and of a president and two vice-presidents (who shall, however, be members of the council) shall be elected annually at such meeting and the said officers shall retire annually but shall be eligible for re-election.

It shall be lawful for any member or members of the association at such meeting to move any resolution which is not inconsistent with the purposes and provisions of this Act.

Chairman's Vote.

25. The person presiding over the provisional council or council or at any general meeting shall have a deliberative as well as a casting vote.

Meeting to Pass By-laws.

26. The provisional council shall forthwith prepare draft by-laws for the association for the purposes enumerated in the next succeeding section and shall convene a special general meeting of the association in Johannesburg to be held not later than six months from the date of the coming into operation of this Act

for the purpose of considering and, if approved, of adopting the said by-laws. The notice convening such meeting shall be sent to the registered address of each member of the association not later than fourteen days before the day appointed for such meeting and shall be accompanied by a copy of the said by-laws.

A majority of the members personally present or represented by proxy in writing at such meeting shall be sufficient to determine all matters to be decided thereat and the non-receipt of the said notice or copy of the proposed by-laws by any member or members shall not invalidate the proceedings at the said meeting, provided that one-third of the number of members then on the register shall be present personally or be represented by proxy in writing.

Purposes for which By-laws may be Made.

27. The council may from time to time, subject to the approval of the association assembled in a special general meeting called for the purpose, make by-laws for any of the following purposes, provided that such by-laws be not inconsistent with the provisions of this Act, and may alter, amend, or repeal such by-laws including the by-laws framed under the last preceding section, that is to say:—

(a) for fixing the amount of the annual subscription payable by members and the time of payment of the same;

(b) for defining what shall be considered unprofessional or dishonourable conduct on the part of an architect;

(c) for regulating the time, mode, and place of summoning and holding ordinary and special general meetings and the quorum to be present thereat and the mode of voting and the conduct of proceedings at any such meetings and the regulations for the adjournment thereof;

(d) for regulating the meetings of the council and the quorum to be present thereat;

(e) for regulating the mode of nomination of members for election to the

council and the mode of filling casual vacancies thereon;

(f) for regulating the times and places for holding examinations of applicants for registration and the subjects and the manner of conducting or holding any such examinations, and for fixing a reasonable fee to be paid by applicants and the conditions on which the examiners shall hold office and their remuneration;

(g) for regulating the mode of election of the officers of the association;

(h) for fixing a tariff prescribing the remuneration which architects shall be entitled to charge for their services;

(i) for determining the qualification and disqualification of councillors.

(j) and generally such by-laws as from time to time seem to the association requisite for giving effect to the provisions of this Act and for the furtherance of the objects of the association.

Alteration of By-laws.

28. No alteration in the by-laws as adopted at the special general meeting referred to in section twenty-six shall be made save by a majority of two-thirds of the members personally present or represented by proxy in writing at the special general meeting convened for the purpose of sanctioning such alteration. Notice of such meeting, and of the alteration or alterations to be proposed thereat, shall be sent by post to the registered address of each member of the association at least fourteen days before the date fixed for the meeting, but the non-receipt of such notice by any member or members shall not invalidate the proceedings thereat provided that one-third of the members then on the register shall be personally present or be represented by proxy in writing.

By-laws—when to take Effect.

29. No by-law framed and adopted under sections twenty-six and twenty-seven of this Act and no alteration, amendment, or repeal of any such by-law shall have any force and effect until the same shall have been approved of by the

Governor-in-Council and published in the "Gazette," whereupon they shall have the force of law and shall be binding upon all members of the association in so far as the same are not in conflict with the provisions of this Act.

Repeal of By-laws by Governor-in-Council.

30. The Governor-in-Council shall at all times have the power to repeal the existing by-laws of the association and may from time to time alter, amend, and add to such by-laws, provided that such alteration, amendment, and addition be not in conflict with the provisions of this Act.

Costs of Promoting this Act.

31. The Council may allocate such sum or sums of money as shall be proved to their satisfaction to have been expended in promoting this Act, and which sum or sums are, in the opinion of the council, reasonable, and may order the same to be paid through their treasurer to the body or bodies, person or persons, who may establish the claim or claims within twelve months of the coming into operation of this Act.

Title and Date of Operation of Act.

32. This Act may be cited for all purposes as the Architects Private Act, 1909, and shall come into operation and have the force of law on the publication thereof in the "Gazette."

DETAILS, OLD & NEW, XXXVIII.

Early Renaissance Altar Rails from Lancashire.

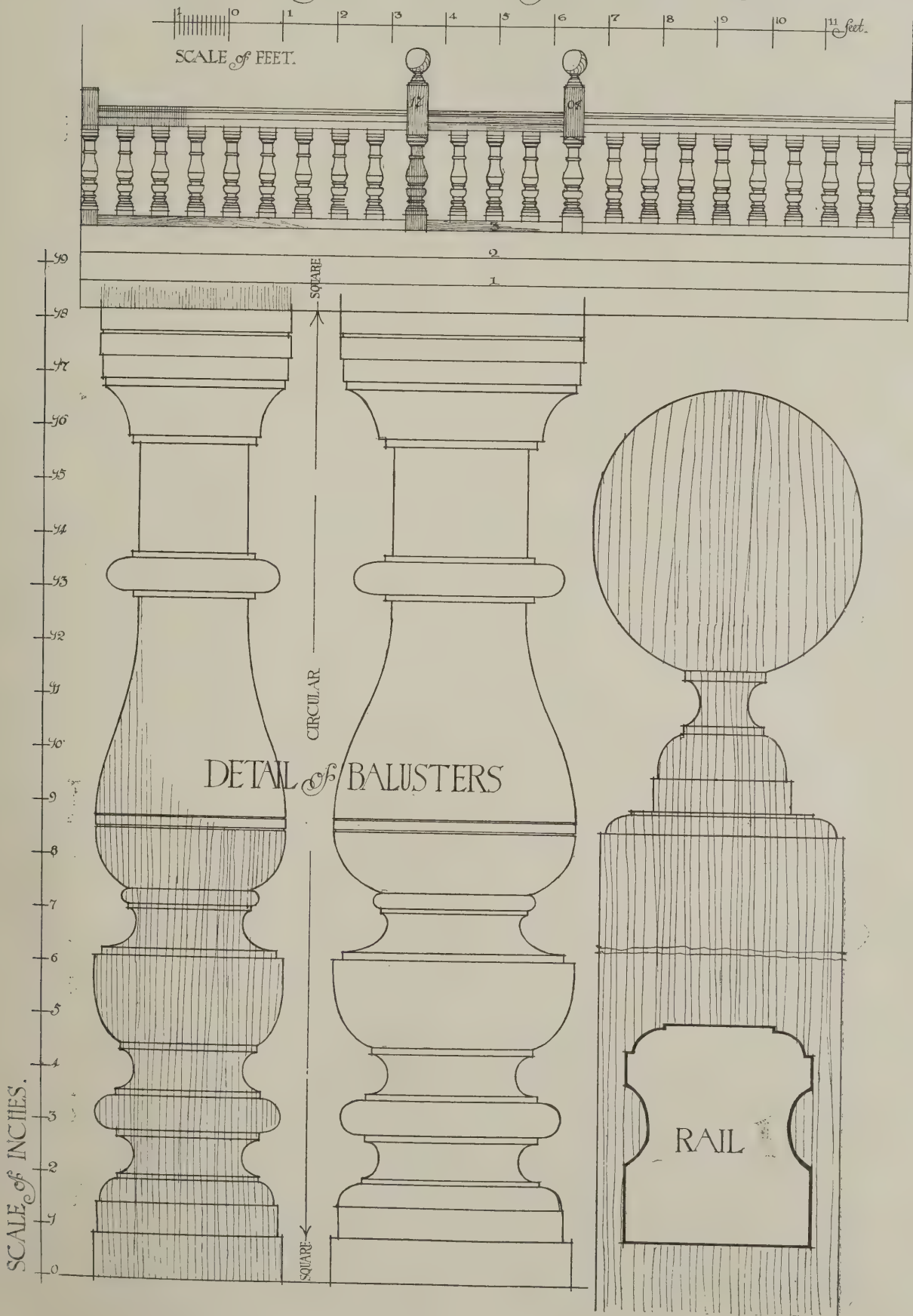
Altar rails were not introduced into the Western church until after the Reformation, consequently there are no real Gothic examples. It is to the "revivalists" that we owe those dreadful cusped and foiled and fretted perversities which are to be found in so many old churches. It does not cause any feeling of incongruity to see Renaissance fittings in old churches—many of the fittings do indeed belong to this period—they seem to be part of a continuous growth, of the opening flower, of developing life. The altar-rail was at first a barrier to keep dogs out of the sanctuary, and was made much higher than is the wont to-day. Its uses to-day are slightly different, and it may be useful to give some dimensions which, to some extent, govern its design. It should be, then, from 1 ft. to 10 in. to 2 ft. high, and set back from the step some thirteen or fourteen inches. The space behind it and the next step must be wide enough to allow the two priests who administer the sacrament to pass one another—to wit, about four feet. This early Renaissance example from Lancashire has a gate. They are made sometimes without one, but it usually adds to the beauty of the design if the rail can be continuous. There is something exceedingly rude about the rail from Bolton-by-Bowland Church, but it is pleasing, strong, and well made. Our only feeling is one of regret that the village carpenter who took these balusters out of the heart of the oak, and turned them so irregularly, and, finally, when he had mounted his curious ball-finials, took his chisel to tell to future generations that it was made in 1704, did not take thought of his own name and carve it over against the date. How much better this for a monument than some crumbling undistinguished stone rotting in a grave-yard!

J. M. W. H.



ALTAR RAILS, BOLTON-BY-BOWLAND CHURCH, LANC.

ALTAR RAIL *from Bolton-by-Bowland Church.*



THE INFLUENCE OF COMPETITION UPON DESIGN.

To describe properly the effect of competition upon architecture would require an analytical comparison of the works of representative architects, won in competition, with other of their works executed after direct selection, and taking all the attendant conditions into account.

Much has been said upon the ethics of the competition, but very little upon the actual influence of competition upon architecture; that is a very broad subject requiring separate and special consideration.

Upon receiving a paper to enter a competition, and upon receipt of the programme and requirements, one realises that he is taking up a new and strange problem, and is dealing with an unknown owner, or committee; the personnel of the jury may or may not be known to him.

In either case (said Mr. J. Milton Dyer, Fellow of the American Institute of Architects, in the course of a paper read at the forty-fifth annual convention of that Institute, at Washington), the economical idea of the plan may often be worked out independently—that is, the disposition of space and relation of departments the one with the other, circulation, etc., may be determined irrespective of any supposed idiosyncrasy on the part of the jury; but even in the case of the plan this independence is only too often influenced by a vague mistrust as to the personal likes or dislikes of the jury, concerning some particular arrangement, thus preventing an individual and heartfelt expression of the solution.

After the plan has been developed to an advanced stage, one may surround it with four walls punctured with holes, or attempt to give these walls architectural expression, and a character which denotes the intended uses of the building. Here, again, one's thoughts turn to the approval of the owner and his expert advisers, rather than to a courageous, independent, impulsive study of the problem. You are afraid to be impulsive, to play with the motives, to do the thing you yourself feel; you may not win.

While it is true that the most important element which is lacking in a competition, and which must therefore affect the final result, is the inability to get in touch with one's client, and thus develop a solution; nevertheless the viewpoint of the expert adviser and jury itself, affecting design, is greatly responsible for the prevailing desire to sell one's soul to win; and it is possible that we should have a code for the Conduct of Jurors, as well as for the Conduct of Competitions and Competitors. Must we, in competitions, be eternally condemned to the use of an order? Is there no value in wall space?

The late John M. Carrère has said that one argument advanced in favour of competition has been the desire to discover new talent, and added, "If a man has talent, his day will come, and it should not come until he is prepared to make use of it."

"A man who has genius to express original ideas on paper is nevertheless not to be entrusted with the execution of the work until he has acquired the requisite experience, for when it comes to the serious work of actual building he requires not only the experience of the practical side of things, but the practical artistic experience; the experience that knows that a thing that looks well on paper represents a thing that is going

to look well in execution; and *that* refers to every detail of the work, the very texture of the material. It requires experience which cannot be acquired by any man, no matter what his genius may be, without practice."

The author believes that the safe, dignified, substantial way in which to obtain recognition in the profession is to gain your clientele through the excellence of your executed work, the importance and value of which will grow as rapidly as it deserves; nevertheless, it has been his experience that the presence of a serious competition in the office does develop men, from the head to the office boy, improving draughtsmanship, knowledge of the principles of design, and the faculty of quickly expressing one's thoughts on paper. An *esprit de corps* is created in the office, for here is a real competition, something more than a school problem, and naturally all take a keener interest in the result. Great good is accomplished in the ateliers of our larger cities and the competitions instituted by the Beaux-Arts Society, and by several magazines, but the efforts of all in collaboration, working in an office upon a serious competition, develop not only draughtsmanship, but a real conception of architecture in its higher meaning, such as many months of routine work may not accomplish.

A great number of competitions, even in some of our best-known offices, have been won by clever young designers, developed under these conditions of training.

While this should not necessarily warrant these men being selected as architects, it nevertheless demonstrates that the system of conducting competitions does not stand for training in design. It is equally true that a number of these young men have, through the medium of competitions, developed into some of the prominent architects of the country, and have shown, by their subsequent work, that they were prepared to make use of their talents.

In America, the Tarsney Act, approved February 20th, 1893, authorising the Secretary of the Treasury to obtain plans and specifications for public buildings, paved the way for a better architecture in the federal buildings, and has in turn, since its adoption, reacted upon the work of this Department of the Secretary of the Treasury, until, as Mr. Glenn Brown, in his review of 1906, states: "Under the Tarsney Act it must be conceded that the work is immeasurably superior to any building done by the Government from 1860 to 1896, and it, together with the merit system which now rules in the office, has been a very material factor in uplifting the character of work done by the corps in the supervising architect's office during the past six years."

Since 1897, under the direction and with the advice and assistance of the officers of the American Institute, programmes have been drawn by the supervising architect for scores of important Government buildings throughout the country, and the result has been public buildings of an excellence of design and execution heretofore unknown in the United States.

These competitions, however, have affected design to an enormous extent. The type of architecture in American Government buildings, as well as other municipal and semi-public buildings, has for the most part become circumscribed. Before the drawings are sent in, it is almost [possible to foretell, within small limitations, the general character of the

design of the contestants. It is always the base storey of a superimposed order, enclosing two or more storeys, with perhaps an attic, or the order will extend from the ground through all the storeys. In any case it is almost sure to be an order, and, as before stated, the value of plain wall space in design seems to be overlooked.

This use of the order as the main feature of a building, with several storeys enclosed in its height, is seldom successful, and probably never when more than two storeys are included.

Why does competition insist upon a Government type requiring architects to crowd these many storeys within the order, thus making corridors of the rooms within, by reason of the usual depths, or rooms too large for an economical arrangement of space, when the logical expression of an economical plan demands that the window openings be made subservient to this plan? In other words, while the character of architecture should proclaim the dignity and purpose of the building, why should the arrangement and lighting of the interior be sacrificed to the everlasting order?

Does the fact of the order in competitive design spring from the belief that this form of architecture is really the established form for public buildings in the United States, or is it to be laid to the door of the system of conducting competitions?

If the latter be true, the author again affirms that the cause lies in that inborn desire to win, and the competitor, in order to do so, gives the jury that official type he believes the jury wants, to the absolute abasement of personal expression and the results of practically all competition judgments prove that he is correct. The jury does demand the recognised official type.

It therefore appears to the author that, in competitions, the jury and expert advisers exert fully as much influence upon design as the competitor himself.

The official type of public buildings, whether for the Government or a municipality, is the offspring of the competition as at present conducted, and, in turn, influences and very often determines the type for many buildings forming part of a grouping plan, such as is being developed in many of the larger cities, thus condemning the whole group to a type which most surely will not be the last word in the architectural expression of public buildings.

Much that has been herein stated may also be said concerning competitions for buildings of a commercial character.

With a possible exception, as in the case of those problems of great monuments which are purely artistic in their character, and which may require the collaboration of the sculptor or decorator, taking into consideration the present status of the competition, the author believes the best method of securing an artistic as well as a practical result is by the direct selection of an architect. But the fact that competitions have been conducted in Europe, and especially in France, for many years with undoubted success, exerting a marked and beneficial influence upon architecture; also the willingness on the part of most of our ablest architects to enter competitions with, as a result, hundreds of successful monuments attesting their skill; and the fact that perhaps more time of the Institute Conventions is devoted to the consideration of the problems pertaining to the competitions than to any other subject—indicate that, while the perfect

Code for the Conduct of Competitions, Competitors, Jurors, and Clients has not yet been developed, nevertheless we may, through a progressive process of education, evolve a system which will eventually enable competition to exert a beneficial effect upon design in architecture.

MANCHESTER SOCIETY OF ARCHITECTS.

Sir Charles Nicholson on Construction and Design.

On Wednesday, January 17th, Sir Charles A. Nicholson, Bart., read before the Manchester Society of Architects a paper on "Construction and Design." The president, Mr. Edgar Wood, occupied the chair, and there was a very large attendance of members.

Sir Charles Nicholson said he would confine his remarks that night to Gothic work. One point became obvious—that as cathedrals were built in a leisurely way, each section, and even each bay, had to be structurally independent and self-supporting. Norman buildings lent themselves to this gradual method, but in Gothic structures strong temporary abutments had to be provided. The weakness of Norman buildings was due to the bad material rather than to thrusts; the collapses of Winchester, Chichester, and Ely towers were due to this cause. The weakness of Gothic structures was that they were maintained in a precarious state of equilibrium which approached instability.

Sir Charles then analysed the development of Gothic construction, first as regards the relation of buttresses to the vaults they supported, then as to the development of the vaults themselves, and finally, the evolution of the apse plan, paying special attention to the parallel process of evolution in England and France. Many points of interest in the construction of Wells Cathedral were instanced, and a section of the tower which was thrown on the screen was specially interesting, showing how the upper stages had been built as light as possible, and how the piers below had been strengthened by the well-known strainer arches and the solid rood screen, and how the tower was latterly stiffened by the filling up of the long lancet windows of the lantern. The ingenious way of augmenting the thrust of the eastern flying buttresses was illustrated; the lower portion of the buttresses, which are received by the slender marble shafts in the Lady Chapel, are built with courses oversailing towards the west. After a survey of the period of fan vaulting, the lecturer dealt with the application to modern construction of the principles which we could discern in the old work. How modern materials should be treated was a question still awaiting solution. Slides representing reinforced concrete buildings, where the concrete was honestly revealed and the monolithic nature of the structure expressed, were shown. In concluding, the lecturer said that the present generation of architects was capable of evolving artistic solutions of each fresh constructive problem that arose, but the large supply of knowledge to be gained from the stupendous works of the old masters of our art cannot be neglected.

Mr. Maule on Architectural Education.

On Wednesday, January 24th, Mr. I. P. G. Maule read a paper on "Architectural Education." The broad basis of education, Mr. Maule said, was not the

superperfect equipment of the giant few, but the sound, sane, and sober training of the many. Specialisation is increasing, but it should be based on a broad and solid foundation of general knowledge. The more everything tends toward specialisation, the longer must be our apprenticeship. He felt that there had not always been sufficient regard paid to the psychology of education, the induction by training of certain habits and qualities, apart from the particular objective.

When a student is brought from practical training to the forced draught of the school, he gets general and special knowledge in an artificial and tabloid form, at the expense of training in initiative and self-reliance, and in observation and deduction. This system is then doomed to failure unless the student is brought into contact with the facts of actual existence which he will afterwards meet. There is a general feeling among educationists that our systems fail in this regard.

In addition to neglect of this aspect, there is a tendency to confuse the issue of general and specialised education. The highly specialised forms of architecture have been regarded as the goal of all. He referred to the erroneous impression that monumental design should form part of the first four years' course. Is there any recognised training in the arts, sciences, or professions in which the highest ultimate problems were given at an elementary stage? It does not follow, however, that because monumental problems are relegated to an advanced stage, the qualities which underlie the production of great architecture would be neglected. They would be insisted upon from the commencement, in problems, however simple and small in scale, with a view to the ultimate larger conception of monumental architecture.

The chaotic state of opinion is shown by the report of the Board of Architectural Education recently issued, which, while containing much that is excellent, suggests an amount of ground to be covered in four years which is simply abnormal; and the matter is further complicated by the present state of architectural politics. He felt, however, that some definite idea as to the real objective might be found.

He thought the following main principles should be recognised:—

(1) The compulsory insistence on a general training of not less than four years, two of which should be passed in an architectural school. The standard might rank with the present Intermediate papers.

(2) The formation of machinery for more advanced and specialised study, the first grade of which should rank with the present final papers. The remaining advanced courses would be of the nature of specialisation.

(3) Greater time for study by all who wish to do more than acquire a minimum standard.

The whole question hinges upon the interpretation of the functions of the architect, and the recognition of the fact that architecture is structural and decorated, and *not* a decorated art constructed—a living, pulsating structure; no scene-painting in stone, with the engineer as stage carpenter. The essential qualities of the general education should be—(1) Scientific study of materials and construction in their elementary form. (2) Analytical study of past building methods and architectural expression, and the deduction from this of the broad principles

of design. (3) The application of the above—the production of design from knowledge and study of principles. The study of the humanities of art should form part of the training from the very first. This general training, he was sure, from a varied experience, could not be mastered by the average student in less than four years.

LEICESTER SOCIETY OF ARCHITECTS.

Mr. H. E. Trayleur on the Architecture of Stamford.

A meeting of this society was held in the society's rooms, in St. Martins East, on Friday last, there being a good attendance. The President (Mr. W. M. Cowdell, F.R.I.B.A.) was in the chair. An interesting lecture on "The Architecture of Stamford" was given by Mr. H. F. Trayleur, A.R.I.B.A., who, after giving a brief introductory history of the town, dealt with eleventh-century architecture, drawing attention to important points of development. He then went on to speak of characteristic thirteenth, fourteenth, and fifteenth-century work, and also examples of Tudor, Queen Anne, and Georgian houses, almshouses, and other characteristic local work, including some Sheraton shop fronts. The lecture was illustrated by lantern slides, including a number of views of Burleigh House.—A vote of thanks was accorded the lecturer on the motion of Mr. S. Perkins Pick, seconded by Mr. B. J. Fletcher, headmaster of the School of Art, and supported by Ald. A. E. Sawday, Mr. Herbert, and the president.—In responding, Mr. Trayleur expressed his willingness to give to the society a number of the architectural drawings of the late Mr. F. W. Ordish, with whom his father was formerly in partnership. The suggestion was heartily applauded.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.

An ordinary meeting of the above body was held last week at the rooms, South Frederick Lane. The President, Mr. Page L. Dickinson, occupied the chair, and there was a large attendance of members.

The President announced that Mr. A. W. Reid had resigned the vice-presidency in order to take up the post of secretary, which was rendered vacant by the resignation of Mr. H. T. O'Rourke, and that the committee had nominated Mr. G. L. O'Connor as vice-president in his stead, and his name will go forward for election at the next general meeting.

Mr. R. M. Butler, F.R.I.B.A., then delivered a lecture on "Early Romanesque Architecture in Ireland," illustrated by numerous lantern slides. At its conclusion, Mr. Anthony Scott, in proposing a vote of thanks to the lecturer, referred to various details of the buildings described by Mr. Butler. Mr. Lynch seconded the vote of thanks, and said he was glad such emphasis was laid on the value of Petrie's work, as in his opinion it was the most reliable treatise on the subject to be had.

Mr. Butler, replying said that in his opinion it was a lamentable fact that the memory of a man like Petrie, who had done so much for archaeological research in Ireland, was not perpetuated in some way, and it was to be regretted that his remains should lie in Mount Jerome Cemetery covered by a plain slab of stone about two feet square.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

Mr. William Davidson on East Anglian Rural Churches and their Decoration.

At the general meeting of this Society held on January 25th, Mr. Wm. Davidson delivered a lecture on "East Anglian Rural Churches and their Decorations." The chair was occupied by Mr. A. E. Kirk, A.R.I.B.A., vice-president.

In opening the lecture, Mr. Davidson said that in no other part of England, during the Middle Ages, had there been a greater activity in ecclesiastical architecture and decorative and applied art than in East Anglia. Many fine examples of all periods of architecture, from the pre-Conquest work, as at Great Dunham, to the great Perpendicular rural churches of the fifteenth century, such as Walpole St. Peter, Causton, Sall, etc., were shown and described. The influence of material on the design was illustrated by the great prevalence of flint work (no other building stone being readily available), built either in the form of concrete walling, or used as a mosaic facing in various colours. The frequent use of round towers was also held to be due to the same cause—lack of stone for corners and dressings.

Of Norman work, the central tower at South Topham; the arcades at Castle Acre, Walsoken, Binham, Wymondham, Hales, and Hadleigh; and the doorways at Thwaite, Aldeby, South Burlingham, and Easton, were described as fine examples. The beautiful parish church at West Walton, with its magnificent lych-gate and bell campanile, and the west front at Binham, were stated to be as fine Early English detail as any in the country. The stone carving of the nave pier caps at West Walton marked the high-water mark of such work in England.

The Pilgrims' Chapel at Houghton-le-Dale was given as an exquisite example of Decorated work. In discussing the transition from Decorated to Perpendicular, instances were quoted which in the lecturer's opinion proved conclusively that these two styles were very much mixed up, as it was perfectly evident that much of the Decorated work was executed long after the birth of Perpendicular, showing that even in the best and most traditional of the so-called "good old days" men were not above copying a "good old style." This mixture of the ridged and flowing lines gave the Perpendicular work in Norfolk a freedom of charm not to be found in work of the same period in other parts of the country.

In speaking of the great churches of the fourteenth and fifteenth centuries, the main dimensions of a few were given, and the evolution in plan was described. In the East Anglian church, the chancel roof was usually lower than the nave (Long Melford and Southwold were quoted as notable exceptions), from which it was generally separated by a chancel arch and a rood screen, and in some cases a window existed in the east gable of the nave, over the chancel arch. The loftiness of many of these churches, with their high clerestory windows, was shown by examples at Sall, Cawston, Upton, and Potter Heigham. Views were shown of the great towers at Sall, Cawston, Blofield, Tunstead, Wymondham, Lavenham, etc., which, in some cases, Mr. Davidson considered, from their unfinished appearance, must have originally had a wood or lead lantern such as we find at East Harling, Swaffham, Aylsham, etc. The walls of some of these towers were 7 ft. thick at the ground level.

Many north and south porches with decorative flint work and carving existed, among others, Worstead, Lavenham, and Kersey being mentioned and shown as good examples. The great wealth of fine font covers was illustrated by many notable examples. Walsingham, Upton, Hadleigh, and Palgrave being specially mentioned; also the font covers of various types, particularly those of Trunch and Sall, which showed traces of the original colours.

Slides were shown of single and double hammer-beam roofs, which, along with the rood screens and fonts, were the glory of their eastern counties. Of the single type Ludham, Potter Heigham, North Burlingham, Trunch, and Southwold were stated to be among the most beautiful in composition, line, and design. The magnificent double hammer-beam roofs at Knapton and Cawston were illustrated by many detail slides, giving a poetic impression of their beauty under various conditions of lighting. The evolution in design from the stone roof was traced, and the various schemes of roof painting were given in detail.

A short account was then given of the famous painted rood screens of Norfolk and Suffolk, and many beautiful examples of figure painting were shown, with details of mouldings and floral painted ornaments. A description of the main colour schemes was given. Several schools of figure painters were shown to have existed, and the lecturer had no doubt whatever as to nearly all the work being that of English artists, though foreign influences were clearly evident, notably Florentine, Flemish, and German. The archaic influence of the Byzantine was said to have survived to a later date in the English Gothic than in the Italian, probably about 100 years.

In speaking of screen and wall paintings, Mr. Davidson expressed the opinion that these do not seem to have been properly studied, otherwise the great beauty of many of these fragments would be pointed out more to students of decorative art. Mr. E. W. Tristram, of London, has, however, taken up the study of English mediæval wall painting seriously, and it was to be hoped that his fine collection of drawings and research would one day be published. On the Continent such work is done at the expense of the State. Many rooms at the National Gallery were devoted to Italian and other foreign schools, but we may hunt in vain for a solitary example of our own great mediæval school of decorative art. No one wished to see these paintings taken out of their right place in the churches, but there are many fine examples in the hands of private persons, a few of which could surely be acquired for the nation.

In concluding his paper, Mr. Davidson showed and described the work of various crafts, such as glass, iron, brass, and leather work, the fine quality of which showed how all the arts arose and developed with that of architecture. The mediæval church in East Anglia, at the height of its splendour, possessed a great architectural and decorative unity, and must have simply glowed with colour; tiled floors, frescoed walls, painted screens, painted roof, and stained glass, all blending harmoniously together. In such work we have a great heritage and inspiration, but under existing conditions it is difficult for even the best of men to do their best and to emulate such glorious work. The lecture was illustrated by numerous detail drawings, water-colours, and lantern slides.

ARCHITECTURAL ASSOCIATION.

Visit to the Regent Street Polytechnic.

The second spring visit of the Architectural Association took place on Saturday, January 27th, when many members took the opportunity to visit the new buildings of the Regent Street Polytechnic designed by Mr. F. T. Verity, F.R.I.B.A. and Mr. George A. Mitchell, A.R.I.B.A.

The building consists of a new block with a frontage to Regent Street, and reconstructed gymnasium block at the rear. The whole of the structure is steel framed, with reinforced-concrete floor slabs averaging 21 ft. by 7 ft. 6 in. All the steel work is riveted, as extreme rigidity is required in many of the laboratories and rooms.

The foundations of the front block consist of a reinforced concrete grillage with steel grillages under the stanchions. The vaults under the pavement and retaining wall, and also the staircase, are of ferro-concrete on the Hennebique system. The height of the building from the top of the concrete grillage to the roof is 130 ft.

The facade is in Portland stone, and is part of a larger scheme which is to be completed later. It was erected to the designs of Mr. F. T. Verity, F.R.I.B.A. A drawing showing this scheme, together with a $\frac{1}{2}$ in. detail, were exhibited.

The new block, facing Regent Street, has nine storeys, including two basements, the ground and six other floors.

The ground floor has a large entrance hall, 60 ft. square, and is lined with various coloured marbles. The main staircase is placed centrally, and extends to the top floor; and each floor is planned with a central corridor and class-room opening from both its sides.

The walls to the first floor on the staircase are lined with marble. On each side there is an electric passenger lift for all floors of the staircase.

A large concert hall, seating 700 persons, and the Fyvie Hall, seating 300 persons, and various administrative offices complete the ground floor.

The Fyvie Hall is panelled in Austrian oak, and has an ornamental plaster ceiling, and a row of stained-glass windows on one side.

The first floor includes a games room with various club rooms opening out of it, and the remainder of this floor is occupied by the administrative staff and laboratories.

The second and third floors are divided into class and lecture rooms, which are occupied by the various departments of the day and evening schools.

The fourth floor is used by the School of Architecture and the School of Photography, and generally conforms to the planning of the two floors below.

The fifth and sixth floors are occupied by the School of Art, and the sixth floor, being the topmost, is lit from the roof and with north light only.

This floor is used for the life and modelling rooms.

The roof is finished with a float cement surface, and there is access to all parts of it. The portion facing Regent Street is covered with green Westmorland slates.

In the basements, workshops are provided for practical instruction in electrical, building trades, and mechanical engineering work.

The hot-water installation is also here. The building is heated by the low-pressure hot-water system with a forced circulation and three boilers are provided. Two are sufficient to do the work, and the third



REGENT STREET POLYTECHNIC, LONDON: DETAIL OF FACADE. FRANK T. VERITY, F.R.I.B.A., ARCHITECT.

only for cases of emergency. The boilers are also used for heating the swimming bath, which is used during the summer months only.

The gymnasium block, which has been reconstructed, consists of a basement and three floors. The original floor of the gymnasium has been sunk to basement level, and the old floor level is now gallery level. The gymnasium locker rooms and the swimming bath are also in the basement. The swimming bath, which is part of the old building, and has not been altered, is 80 ft. by 30 ft.,

and is used only in the summer months. A new system of supplying and purifying the water is to be installed, the contractors being Messrs. Royles and Co.

The walls of the gymnasium were found to be too weak to support the new gallery, and they have been strengthened with stanchions, from which the gallery is cantilevered.

The floors above are used as classrooms, and there is access to them from the half-landings of the main staircase.

The floors of the classrooms throughout are of concrete, and are floated to a

smooth surface and covered with linoleum. The corridors are finished with a paving of granolithic.

The concert hall, gymnasium, and lower parts of the building, are ventilated by a combination of the plenum and the extraction systems, the air being screened, washed, and ozonised before being forced through the ducts.

Two suction plants are installed for cleaning by the vacuum process. The building has been constructed at the cost of £90,000, and the general contractors were Messrs. Holloway Bros.

LONDON: AN ARCHITECTURAL SYLLABUS.

LECTURE BY PROFESSOR BERESFORD PITE.

On Wednesday last, at the Carpenters' Hall, London Wall, Professor Beresford Pite delivered a lecture on "London: An Architectural Syllabus," illustrated with a large number of lantern pictures.

Professor Pite said that his lecture had the idea underlying it that London had in itself the material for forming a useful architectural syllabus of opinion, of doctrine, and of criticism. For this it was not necessary to travel abroad.

Within recent years there had been considerable growth in public interest in architectural matters, and the most recent event that had happened in the architectural world was an event of very great importance—he referred to the publication by the Government of a new plan for an improvement of the access of the great arterial roads to and around London; for the link between the traffic plan and the architectural object was a very close one. There was a real architectural syllabus in London provided by law; that was to say that there were limits set which entirely governed their proceedings and designs, and which, in a sort of subconscious way, issued in architectural results. The London Building Act, 1895, dealt among other things with the formation of streets with open spaces around, and the height of buildings, and there was an architectural aspect in each one of those headings. It dealt with the structure and thickness of walls; it provided rules for recesses and openings; rules as to height; with roofs and their angles; with dormer windows, chimneys, staircases, projections, etc. They could not discuss or create an architectural design without dealing with every one of those items, and every one of them laid down distinctive rules.

That was the Act which every architect and every designer came up against the very moment he attempted to design a building for London. There was therefore an effective syllabus in existence with regard to all those particulars. It would at once be seen that architects and builders in London were confined within very narrow limits. When the architect had instructions, when he was inspired with a brilliant idea, he had battles with the difficulties of the cost and the plan. After he had surmounted them one after the other, he had to bring everything to the desk of that benevolent tyrant the district surveyor, who proceeded to lay down or to apply the law. All those visions of what might be done to impart freshness and charm to city life were subject to the necessity of applying to the London County Council for amending certain of its conditions.

There were plenty of other doctrines on which they might build a syllabus. There was a syllabus of taste which reflected current culture; they might derive a syllabus from social conditions which were reflected in our buildings, besides the evidence of the constructional syllabus to which he had referred. The social syllabus would begin with houses when the merchant lodged over his counting house in the City, some of which houses still remained with us. At that time many went to the artistic district of Bloomsbury Square and others had their ancestral mansions in Lincoln's Inn.

Another generation passed and the social centre shifted to the stucco mansions of Belgravia, and the artistic

brotherhood flitted to the heights of Hampstead. Yet another generation came, and in our time modern London might be described as a motor world, and London itself as a garage or restaurant. The whole of London was a museum out of which it was possible to construct a social syllabus as well as a constructional syllabus. The finest architecture of London was produced before Greece was heard of. They could pursue the universal syllabus and say that following upon Greece, which created the finest architecture of the world, they had the imperial magnificence of Rome, which built the Forum and aqueducts, and the roads of the world. It was interesting and remarkable to note that probably in England alone the preceding civilization of Rome had left not a trace upon our indigenous architecture. Greece did not come first with us, and Rome did not come second—they were come and gone before we commenced. The English architectural syllabus really began with the Gothic architecture which had given us a magnificent collection of mediæval buildings in London. After the Gothic, England began to wake up to its position in the general syllabus. Gothic was the first point at which we came into contact with the first architecture of civilization; that was to say, the architecture of the Middle Ages, which had its existence in England for the first time. After the Gothic they came to the period of the Renaissance, and England had her place in the universal syllabus, though somewhat late in the day. The greater buildings of the Renaissance in Italy were built and completed while we were still building Henry VII.'s chapel at Westminster. It was not until the modern era that England could be said to be leader. Such a syllabus as he had described was only apparently historical; it was not really so, and it was only superficial in the sense of its being concerned with æsthetic ideas, not with the real architectural interest. He could find a Greek building in London when he looked at the British Museum; he could find Roman buildings and Italian buildings, but they were imitations, not revivals.

He was going to suggest to them that evening an architectural syllabus which was a constructional syllabus as well as historical. To give them a rough notion of what he meant by an historical syllabus he would just run through on the one hand the constructional development of London, and they would see that they could put on the other hand the historical development of London, and between the constructional syllabus and the historical he hoped they would get the guidance which they needed. Constructionally the first element in the syllabus was the London of wattle and mud. The first London was constructed of those two materials. London at that time was something more than a fishing station, it was a commercial station on the shores of the river.

The second stage in the constructional syllabus was rubble London. Rubble, he suggested, could be connoted with rubbish—he did not mean a London of rubbish, but he meant a London the walls of which were built of rubble stone—undressed, scrappy stone, with a large amount of crude mortar. Rubble London was Gothic London; mediæval London; it was the London of the Tower and of the cathedrals. Rubble London was followed by wooden-framed London; and wooden-framed London lasted all through the Middle Ages well into the

time of Queen Elizabeth. Henry VII had a big wooden palace at Nonsuch. Wooden-framed London was dealt with in a most drastic way by the Great Fire—it was wiped out. The fire of 1666 therefore put an end to the third item in the syllabus and brought them face to face with the fourth, which was brick London, and that London covered the period of Charles II. and Queen Anne. Brick London was associated, as rubble London was, with stone dressing and stone ornaments, but the treatment of stonework in connection with the brick work was different from the treatment of stonework when it was used in connection with the rubble masonry; it became finer and more interesting—in fact, it became masonry of a high order, so that they were shortly face to face with the next item in the syllabus—Portland-stone London—when it was felt that all architectural design lay in a finely finished smooth-faced stone wall. To this period of course belonged St. Paul's Cathedral, followed at a later date by Somers House. From Portland-stone London the next item in the syllabus was stucco London. He admitted that stucco London was very much more dignified and in many ways more interesting, but it was stucco London for all that. Many examples of stucco London were to be found in the City, such as in King William Street and in many places in the West End—it was the architecture of Regent Street; it was the material of Carlton House Terrace. They were now getting near their own time, although they felt a lingering sympathy with the stucco movement still, and they came to the last item in the syllabus—the item with which he commenced: the Building Act London, or modern London.

In that connection he must not forget to mention as an important element in the Building Act London what he ought to call post-cholera London—sanitary London. He did not think he would be far wrong in believing that the greatest interest of modern London to future generations would lie in its large drainage system and in the remarkably beautiful planning that was now done in lasting permanent materials.

Professor Pite then threw on the screen a number of pictures to illustrate the various styles of architecture touched upon in his lecture.

In conclusion, he said that we were in an interesting and enlarging period and we might be on the eve of big changes. He hoped that our accidental aspirations might not come to an end, but that there might still remain among them those characteristics of the English school which had made the nineteenth century so important in its freedom and in its original dealing with building. London had nothing at the present moment to fear from a comparison with Continental countries, though he was bound to admit that Berlin was making very rapid strides after them.

Architecture at London University

The offer which has been previously announced, made anonymously through the Chancellor of London University, to provide at University College, a cost of £30,000, accommodation for teaching of architecture, sculpture, and æsthetics, has been "gratefully accepted" by the Senate of London University, and Professor F. M. Simpson, F.R.I.B.A., has been appointed architect for the buildings.

NEWS ITEMS.

Change of Address.

Mr. T. Millwood Wilson, architect, has removed his offices from 34, New Bridge Street, E.C., to 4, Staple Inn, Holborn W.C.

Fall of a Ceiling: Damages Awarded.

At Marylebone County Court, last week, a man was awarded £4 damages for injuries sustained from a portion of a ceiling falling upon his head in a room of which he was a weekly tenant.

London Road Schemes.

It is authoritatively announced that a statement recently made to the effect that the Road Board have under consideration proposals for the expenditure of 30 millions on new roads of approach to London is entirely without foundation.

Hospital Heating.

The Dutton Isolation Hospital, near Runcorn, is being supplied with Shorland's warm-air ventilating patent Manchester stoves with descending smoke flues and grates, by Messrs E. H. Shorland and Brother, Ltd., of Failsworth, Manchester.

Memorial to Principal Lang, Aberdeen.

A memorial to Principal Marshall Lang that was unveiled last week in King's College Chapel, Aberdeen, consists of a large bronze tablet, with a bust of the late Principal in low relief, and an inscription stating that it has been erected by his children. The sculptor is Mr. John Tweed.

A Too Accessible Flat Roof.

A curious disadvantage of accessible flat roofs was demonstrated last Wednesday, when a young ox that was one of a herd being driven to the Corporation slaughterhouses at Islington broke away, and, running into one of the entrances of a four-storey tenement, climbed the stone staircase and got on to the flat roof. Here, after it had demolished a chimney-tack and some other brickwork, it was eventually shot.

New Professor at the Royal Academy.

Mr. A. P. Laurie, M.A., D.Sc., some-time Fellow of King's College, Cambridge, Principal of the Heriot-Watt College, Edinburgh, has been elected to the Professorship of Chemistry in the Royal Academy vacant by the resignation of Sir Arthur Church, K.C.V.O., F.R.S. Dr. Laurie, who is the eldest son of Professor S. Laurie, was born in 1861, and had a distinguished career at Edinburgh and Cambridge Universities. Among the scientific works he has published are "Processes, Pigments, and Vehicles—Manual for Art Students," 1895; "Greek and Roman Methods of Painting," 1910; and "Materials Used in the Painter's Craft from the Earliest Times to the End of the 17th Century," 1911. He has been examiner in Oils and Colours at the City and Guilds Institute.

National Insurance Act, 1911: Advisory Council.

We are informed that the National Insurance Advisory Council, of No. 3, Northampton Square, London, E.C., is prepared to advise enquirers, whether employers or employed, male or female,

who are desirous of ascertaining their position under the National Insurance Act. Arrangements can be made for speakers to be sent if desired. Any person desirous of making an enquiry, whether on his own behalf or on the behalf of any other person, or any society or club, should forward a letter containing full particulars and a stamped addressed envelope for reply to the Secretary at the above address. No charge will be made for any information given in response to any enquiry.

The Rousseau Monument.

The 200th anniversary of the birth of Jean-Jacques Rousseau falls on June 28th next, when, it is expected, a feature of the celebrations will be the inauguration, in the Panthéon, of the monument which M. Bartholomé, the sculptor, has just finished.

The Example of Early Rome.

At a meeting of the Midland section of the Institute of Sanitary Engineers, held at the Exchange Hotel, Birmingham, last week, Mr. G. Salway Nicol read a paper describing the methods adopted in constructing the great concrete vaults and domes, the remains of which are to this day conspicuous in and around the Roman Forum. In Roman times, concrete was used in conjunction with brick ribs, as a kind of reinforcement. The water supply and drainage system of Rome was that on which methods of to-day were founded. The ancient city, however, enjoyed a much larger supply of water, and the Roman baths and public buildings in connection with them for the development of physical and intellectual life had nothing approaching them in any modern city. The design, construction, and equipment of these remarkable buildings had much to teach those now working for the improvement of many branches of civic life.

The London County and Westminster Bank.

The directors of the London County and Westminster Bank, Ltd., in submitting to their shareholders the balance-sheet as on December 31st last, report that the net profit amounts to £911,286 18s. 10d., which with £156,229 1s. 10d., the balance brought forward from 1910, leaves available the sum of £1,067,516 0s. 8d. Out of this amount a further dividend of 10½ per cent. (making 21¼ per cent. for the year) has been paid, and, sundry other appropriations having been made, the balance carried forward is £143,766. It is announced that during the past year certain assets of the Birkbeck Bank have been purchased, and a branch, known as the Birkbeck Branch, has been established in the premises. Branches have also been opened at Golder's Green, Leigh-on-Sea, Orpington, and Ramsgate. The head office of the London County and Westminster Bank is at 41, Lothbury, London, E.C., and the bank has agents, correspondents, and branches throughout the United Kingdom, as well as in the principal cities abroad.

COMPETITIONS.

Competitions for Town Planning, Garden Suburb Schemes, etc.

Acting on the recommendation of the R.I.B.A. Competitions Committee, the Council of the Royal Institute give notice that in the case of competitions for town planning, garden suburb schemes, and kindred enterprises, the competition

amongst architects should be confined to the design, and architects should not undertake the erection of the buildings they have designed for competition purposes. Further, the Council are of opinion that members of the Royal Institute should not act as assessors to or otherwise countenance a competition unless it is limited to the design only;

East Sussex Hospital, Hastings.

The awards in this competition are as follows:—1st, No. 6, Messrs. John Saxon Snell and Stanley M. Spoor, London, W. (conjointly); 2nd, No. 9, Messrs. C. K. and T. C. Mayor, Manchester; 3rd, No. 51, Messrs. Adams and Holden, London W.C. The designs will be publicly exhibited in the Drill Hall, Middle Street, Hastings, on February 13th, 14th, and 15th.

New Public Library, Stafford.

The designs for the new public Library at Stafford will be adjudicated upon this week, and the designs will be on exhibition in the Borough Hall, Stafford, on Friday and Saturday next, February 9th and 10th, from 10 a.m. to 9 p.m.

JUNE 28TH. TOWN PLANNING SCHEME, HALE, CHESHIRE.—Schemes are invited by Hale U.D.C., for town-planning in this district, for which premiums of £50 and £25 are offered. Apply to Council Offices, Hale, Cheshire.

THE JUNIOR INSTITUTION OF ENGINEERS.

Visit to Western Electric Company's Works.

A party of members of this Institution, through the kind permission of Mr. G. E. Pingree, managing director, paid a visit recently to the works of the Western Electric Co. at North Woolwich, and spent a most interesting and profitable time in being shown over the various departments, amongst which may be mentioned the milling department, equipped with a large number of milling machines of various types; the punch press department, containing presses of all kinds; the partial assembly department, where various intermediate operations are carried on; a fitters' shop, together with the repair department, under the charge of the factory engineer; the iron-working and tinsmiths' shops; a switchboard frame assembly room; an exceptionally well equipped tool-making room, with its small drawing and inspection offices; drilling and full automatic machinery; condenser department, coil winding room; switchboard cabling department; interior of paper-covering shop; impregnating tanks; motor-driven hydraulic pumps; armouring machine; lead press shop; generating plant in power station; telephone cable stranding shop, with its huge 500-pair stranding machine, and condensing plant. The magnitude of the works impressed the visitors, who were fortunate in seeing the various processes and machinery in operation, and their thanks were expressed by Mr. Walter T. Dunn, chairman of the Institution, to which Mr. G. H. Nash and Mr. Chas. Rice replied; and the visit came to a conclusion.

On February 12th, the Institution is holding a combined meeting with the Architectural Association, to hear and discuss a paper by Mr. Paul Waterhouse, M.A., F.R.I.B.A., on "Bridges," and on February 17th, the Institution's annual dinner is to be held.

NATIONAL FEDERATION OF
BUILDING TRADES
EMPLOYERS.

ANNUAL MEETING IN LONDON.

The annual general meeting of the National Federation of Building Trades Employers was held at the Trocadero Restaurant, Piccadilly Circus, London, on Wednesday last, January 31st, the president, Mr. J. W. White, in the chair.

The chairman, presenting the annual report, referred at some length to the immense amount of work carried out by the Federation in the matter of industrial legislation, particularly with regard to insurance for loss of health, sickness, and unemployment. They had endeavoured to obtain an interview with the Chancellor of the Exchequer, but without result; he thought it was a great pity that they had not had an opportunity for the expression of their views in regard to Part I.

With regard to insurance against unemployment, their reception by the Board of Trade had been everything that could be desired. The Bill, he thought, had been considerably modified as a result of their representations. By the Bill, as it originally stood, all apprentices were included; but now indentured apprentices were excluded. In their interview with Mr. Buxton, one of the chief points raised was: If a joiner was to be included under the scheme, why not a cabinet-maker? Also, if those who were employed for fixing were to be included, why not those who were engaged in the preparation of material? He understood that under the Act, with the exception of the joiner, only those who were actually working on the site would be included.

Mr. Smethurst seconded the adoption of the report, and the motion was carried.

Mr. W. Thomas then moved the adoption of the auditor's report and the accounts and balance-sheet, Mr. Sinclair seconding the motion, which was carried.

Mr. H. F. Higgs put forward a recommendation of the Council for the revision of certain rules having reference to the payment of subscriptions; this was agreed. Certain proposed amendments in the National Form of Contract and a proposal from the Institute of Builders for a form of sub-contract for the use where specialists are made sub-contractors, with consequential amendments to Clauses 20 and 28 of the agreed form of contract, were submitted. At this early stage of the negotiations, and in view of the fact that the sanction of the R.I.B.A. has yet to be obtained, it was deemed inexpedient to make these amendments public.

Mr. Smethurst proposed their adoption, Mr. Blackburn seconding the resolution, which, after considerable discussion, was carried.

Mr. William Shepherd then presented the report of the Employers' Parliamentary Council, the adoption of which was proposed by Mr. Smethurst, who referred to another and similar organisation that had been formed in Lancashire by Sir Charles Macara. Mr. Smethurst suggested that the efforts of the Employers' Parliamentary Council and those of this new organisation might be advantageously co-ordinated, since both bodies sought to attain similar ends. Mr. Woods, of Bolton, seconded the adoption of the report.

Mr. Townsley, of Hull, representing the Yorkshire Federation, put forward a suggestion with respect to the fair wages clause in contracts. In Yorkshire, he

said, the fair wages clause was always incorporated in imperial, municipal, and other contracts, and there was a strong feeling in Yorkshire that master-builders were not advocating their own interests in that connection so well as the trade unions did. He wanted the National Federation to take the matter up, and to procure for them similar protection to that accorded to the trade unions.

Councillor Easten, of Newcastle, suggested that the same conditions should apply equally both to private and public bodies. Further discussion ensued, among those who took part being Mr. Davidson, of Leeds; Councillor Blackburn, of Newport (Mon.); Mr. Whitehouse, of Birmingham; Mr. Cooke, of Preston; Mr. Ambrose, of Bath; and Mr. Locan, of Manchester.

A representative from the Midland Centre then drew attention to the practice of inserting provisional sums in quantities for school buildings, suggesting that the question be referred to the Administrative Committee. This was agreed to.

Mr. Townsley, speaking on the subject of standard wages and the increased cost of living, said that the latter was variously estimated from 1.9 to 10 per cent. He suggested action by the Federation with a view to obtaining reliable data. The motion was seconded by Mr. Rushforth, of Grimsby, and carried.

On the question of the supply of goods to the public on trade terms, Mr. Townsley, representing the Yorkshire Federation, drew attention to the expediency of a closer alliance with kindred trades. He said there could be no two opinions about the necessity for a closer alliance between kindred trades and that Federation. There was in existence a confederation of three or four federations all kindred to the building trade, having a membership of 2,500. The accession of this body would be a great source of strength to the Federation.

Mr. Hopkins, of York, said that if sub-contractors could get a good authority for payment of money due to them, there would be no question of secession. The whole trouble lay there, he thought.

Mr. Cooke said there was a distinct feeling among the smaller trades that if they joined the Federation they would probably be swamped, and that their interests would not receive enough attention.

Mr. Woods, of the Lancashire and Cheshire Federation, put forward some suggestions as to future action with respect to the National Insurance Act. He pointed out that Part I. of the Act ignored builders as business men, and imposed upon them because they had few votes. With regard to Part II. of the Act, he would like to add his congratulations to their secretary and president for the valuable concessions they had obtained from the Board of Trade. Referring to some of the inequalities of the Act, the speaker noted that the commissioners had power to increase the amount of the contribution, both of employees and employer, up to 3½d. per week. He suggested that the question be referred to the Administrative Committee for further consideration and action if deemed advisable. Mr. Matthews seconded the resolution, which was carried.

Mr. Storrs then referred to the proposals to amend certain of the rules of the National Conciliation Boards. It was decided that some of the proposed amendments should be left to the employers' representatives on the Board itself to deal with.

Mr. Sinclair referred to the proposed alteration of Rule 1 of the Conciliation Board by the addition of a clause making it an object of the conciliation scheme to adjust all disputes involving a stoppage of work. Mr. Sinclair also dealt with a proposal by the operatives to restrict the scope of the scheme by excluding disputes between unionists and non-unionists. If, he said, they employed unionists only would they—the unionists—guarantee to work only for federated employers?

After considerable discussion by Mr. Moss, Mr. Cooke, Mr. Matthews, Mr. Storrs, Mr. Moffatt, Mr. Long, and Mr. Smethurst, the following resolution was carried: "That the Administrative Committee be requested to circularise each branch association throughout the Federation, asking them to consider the question of the action of trade union workmen in claiming the right to refuse to work with non-unionists; and to say if the settled opinion of the association is that the right of the employer to employ whom he will, and for the workman to work for whom he will, shall, as far as possible, be maintained; and, if necessary, they will support the Federation if they desire to fight this issue. And it be an instruction to the Administrative Committee to issue a memorandum reviewing the position, and to send it out with the former request."

Proposals by the N.A.O.P. for the amendment of Rules 1, 2, 3, 4, and of the joint agreement between the N.A.M.P. and the N.A.O.P. were considered.

Mr. Cooke moved a resolution to the effect that while there was something to be said for the proposal to alter Rules 2, 3, and 4, the proposal to alter Rule 1 and to insert a new clause, should be opposed.

Mr. Lindley seconded the resolution which was carried.

The elections by federations for the new Executive Council having been announced, and certain other business having been transacted, the retiring president said he had great pleasure in proposing Mr. James Wright, of Nottingham, as President for the new year. No one, he said, was more deserving of the honour than Mr. Wright.

Having been invested with the chair of office, Mr. Wright said he did not undervalue the honour they had done him, but he accepted it with a good deal of diffidence. The position was one of great responsibility, and it had been very ably filled in past years. He would, however, do his best to fulfil the duties entrusted to him.

On the invitation of the Midland Centre it was then decided to hold the summer meeting at Nottingham.

Mr. Ernest J. Brown then proposed a vote of thanks to Mr. A. G. White for his whole-hearted service to the Federation.

Mr. J. W. White seconded the motion which was heartily supported by Mr. George Macfarlane and several other gentlemen.

Mr. A. G. White briefly replied.

MODERN HOUSE PLANNING.

A paper on this subject was read by Mr. A. G. R. Mackenzie before last week's meeting of the Architectural Association but owing to the pressure on our space are obliged to hold over our report next week. Among those who took part in the discussion that followed the reading of the paper were: Mr. G. Jenkins, Mr. H. H. Wigglesworth, Geoffrey Lucas, Mr. H. V. Ashley, and Mr. Curtis Green.

THE ARCHITECTS' & BUILDERS' JOURNAL

WEDNESDAY,
FEBRUARY 14th, 1912.

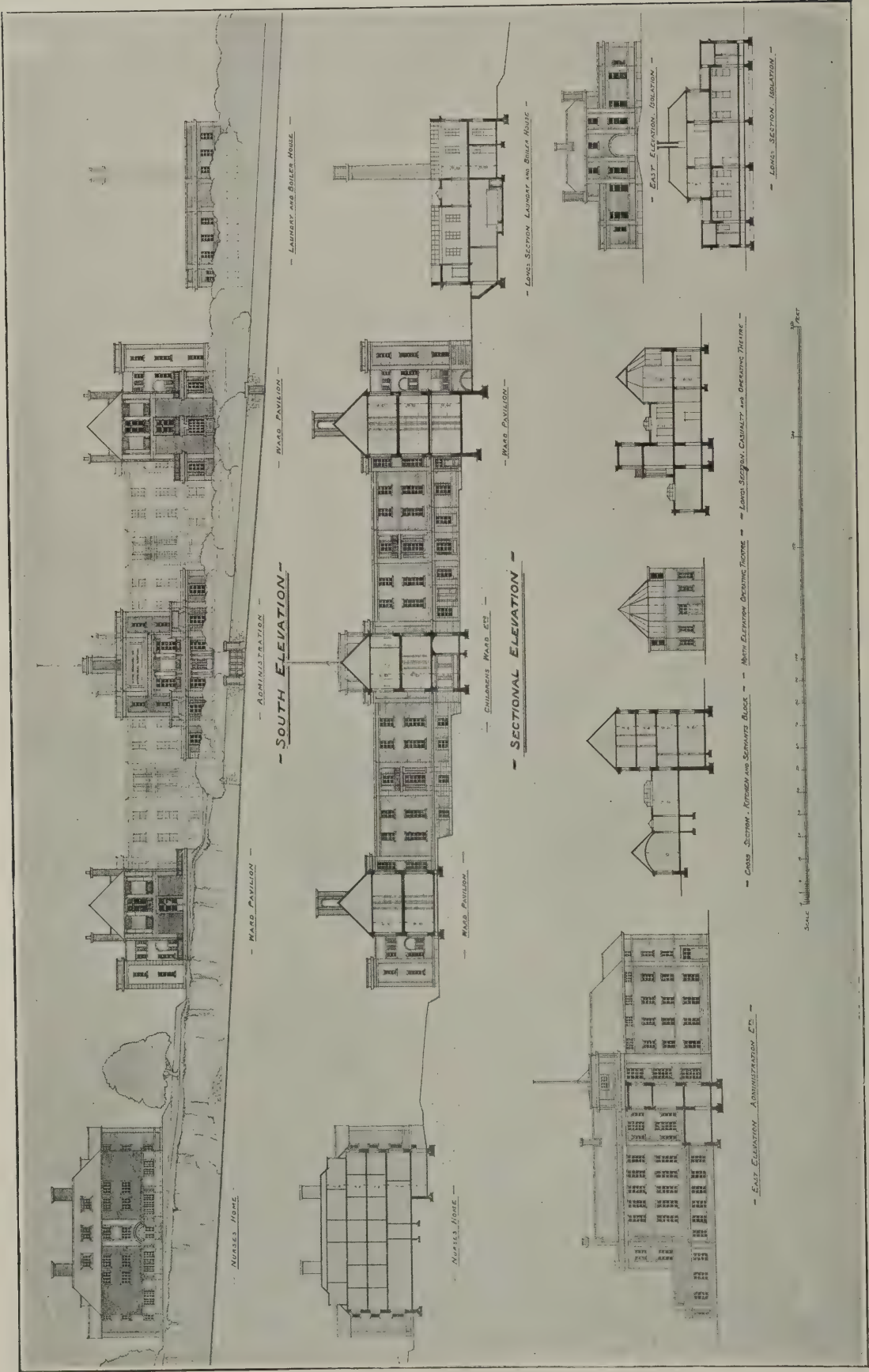
Volume XXXV.

No. 891.



BEDROOM CORRIDOR, "THE KNOLL," LEICESTER.

W. H. BIDLAKE, M.A., ARCHITECT.



THIRD-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS. H. PERCY ADAMS, F.R.I.B.A., AND CHARLES HOLDEN, A.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

FEBRUARY 14th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 891.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Inigo Jones and the Whitehall Palace.

AT the meeting of the Archæological Institute on the 7th Mr. J. A. Gotch read a remarkable paper on the subject of "The Original Drawings of the Palace of Whitehall attributed to Inigo Jones." The meeting took place at the rooms of the Society of Antiquaries, Sir Henry Loworth in the chair. Mr. Gotch has made an exhaustive study of the various drawings existing for the Whitehall Palace. These are curiously dispersed, some of them being in the Chatsworth collection, some at Worcester College and elsewhere, and drawings referring to the same design are at places far apart. It was only by the aid of photography that it was possible to put some of these dispersed drawings together and examine them collectively. One result is that there are in all seven different designs for a Whitehall Palace in existence, and that none of these can be positively traced to Inigo Jones as their author, all those which are signed bearing the signature of his pupil and devoted admirer William Webb. Two of the plans, one of them the well-known one always attributed to Inigo Jones, have the feature of the great circular court which is the finest point in the plan. It does not appear, as far as one could follow out the rather intricate argument of the paper, that any doubt is thrown on the authorship of the Banqueting-house now existing; we are still to regard that as the design of Inigo Jones, although we believe that as a matter of fact not much of the original masonry of the arcade remains, the records of the Office of Works showing that it has been extensively renewed and patched up at different periods. Webb had filled the post of Deputy-Surveyor during part of the lifetime of Inigo Jones, and in his application for the surveyorship under Charles II. referred to this fact to support his claim. Mr. Weaver, in the discussion which followed the paper, said that he either declined merely to accept the statements of Webb as to his former position; at all events they needed corroboration from some other source. Mr. Gotch appears to think that his investigations have finally disposed of Inigo Jones's claim to the great plan of the palace. It seems to us that what he has proved is only that there are no actual drawings of it by Inigo Jones. Does it follow, from that, that the conception of it was not his? Webb lived in intimacy with Inigo Jones, was constantly working under him, and had the most enthusiastic admiration for him. Is it not quite possible that in making the plan signed with his name he was working out a scheme which originated with his master? There is nothing beyond this plan, if it were his, to show that Webb was a remarkable architectural genius; the elevations which may be admitted to be his are poor and commonplace, and show none of that nobility of Classic style which characterises the Banqueting-house. The conclusion, to our minds, is that Webb was working on Inigo Jones's ideas. There is a curious parallel to this in the history of music. It is known that Mozart's last and in the respects greatest work, the "Requiem," was only half written by him, and was completed by his pupil Süssmayer; we now know exactly where Mozart's writing ends, and Süssmayer's goes on. But no one doubts that in the finest parts of the latter portion Süssmayer must have been working on ideas derived from his master, as none of Süssmayer's

acknowledged works give any such evidence of genius. Süssmayer was to Mozart exactly what Webb was to Inigo Jones—a trusted pupil and collaborator, with an ardent admiration for his master. It is a curiously parallel case, and it is not unreasonable to conclude that the explanation is the same in both instances. We may on that supposition still regard the grand plan for Whitehall Palace as being essentially the suggestion of Inigo Jones's genius, though put on paper by his pupil, and signed by him as the actual executant of the drawing. The paper as a whole will, we presume, be printed in the Transactions of the Archæological Institute, with reproductions of the various drawings, when we may have more to say about it. We should have expected that a paper like this, which concerns the work and to some extent the reputation of the greatest English architect, would have been read to the Institute of Architects rather than to an archæological society. Its main interest is certainly architectural.

Architectural Drawing.

PROFESSOR BLOMFIELD has taken for his four lectures on Architecture to the Academy students the interesting subject of "Architectural Drawing," a subject which deserves more serious treatment than it has generally received. He commenced by advising students to take the work of past days as a test or example, rather than to follow the fashion of the moment. Work which had retained its importance and interest through a considerable lapse of time afforded a more certain standard, and could be better judged than that which was only the fashion of the present day, and might or might not have permanent value. Some of the present fashions in architectural drawing were, he thought, by no means good; there was a want of that care and certainty of delineation which characterised the drawings of an older school; and he especially deprecated the modern habit of drawing in portentously thick lines, which he believed was fostered a good deal by the influence of competitions, and the desire, in a competition elevation, to give it what was supposed to be a force and vigour that would ensure its not being overlooked. The result of this thick-line drawing was not only inartistic; in view of the use of drawings by a contractor it was highly impractical, rendering accurate measurement of a drawing very difficult. It may be replied, of course, that contract drawings always have (or should have) figured dimensions, which are to be followed in preference to scale measurements; but as to the inartistic effect of this style of drawing, we are quite in agreement with the lecturer. In regard to the ancient use of drawing in connection with architecture, Professor Blomfield thought it was quite impossible that the carefully refined proportions of Greek buildings could have been set out without very careful drawing first, but there was no record of such drawings, and very little of any drawings prepared for mediæval buildings; if made, they had not been preserved. (There is, however, the instance of the large mediæval drawing of the spire of Cologne Cathedral, which was preserved, and was, we believe, made use of in the completion of the front in modern times.) After

showing a drawing of Piranesi's from the "Carcere" set which represented, he said, "the last word in architectural drawing." Professor Blomfield went on to speak of the only mediæval architect who had left a sketch-book behind him, Villars de Honecourt, whose drawings had so fascinated Burges that he proceeded to produce a sketch-book of his own in somewhat the same style. A good number of Villars de Honecourt's sketches were shown by the lantern, with their strange mingling of practical diagrams of planning of all kinds, of sketches of men and animals on the same sheets; anything that came into his head having apparently been put down, however incongruously, on the sheet he happened to be using at the time. The archaeological or historical interest of these strange medleys of draughtsmanship is undeniable; they help to let us see the point of view of the Middle Ages; in other respects, we think a little too much has been made of Villars de Honecourt. The subjects of the other three lectures are thus distributed: on Thursday the 8th, "Some draughtsmen of the sixteenth century—Bramante, da Sangallo, Du Cerceau, De l'Orme"; on Monday the 12th, "French draughtsmen of the seventeenth century"; and on Thursday the 15th, "Italian draughtsmen of the eighteenth century, and Piranesi."

The Soane Awards.

AT last week's meeting of the Royal Institute the President, Mr. Leonard Stokes, delighted everyone by the short address in which, with a great deal of quiet humour, he told the story of his "mistakes" in student days. Mr. Horsley gave a good and thoughtful criticism on the students' designs, and the prizes were afterwards delivered, but we cannot help thinking that a mistake has been made in the matter of the Soane Medallion. When we reviewed the designs we remarked that there was an idea afloat that the Medallion would not be awarded this year; we thought it doubtful whether the designs were up to a level that ought to justify the award; but we were of opinion that the only design to which it could be awarded was that signed "Vista." The Council or the examining committee took a different view, and placed "Vista" third, giving the author an Honourable Mention, but dividing the £100 equally between two other competitors. The surprising point was that, in spite of this award, Mr. Horsley's analysis of the designs decidedly gave the best praise and least fault-finding to "Vista." Why, then, was the author of this design not placed first? The review of the designs was at variance with the decision shown in the awards—it practically confirmed our previously expressed opinion; and we do not think the author of "Vista" has been quite fairly treated. He certainly produced the plan best suited to the problem put before the students, and the one with fewest defects in it.

The Society for Roman Studies.

THE first number of the "Journal" of this Society has just been issued, dated 1911, for it has been delayed in publication. It contains various important articles on Roman subjects, commencing with a long analysis by Mrs. Strong of the exhibition which has been installed in the area of the Thermæ of Diocletian to illustrate the provinces of the Roman Empire. The article forms a kind of summary of the history of Roman conquest, influence, and remains in the various countries outside of Italy which were dominated by the Empire. The exhibition, which was arranged as a part of last year's art exhibition at Rome, is to remain open and unaltered till at least the end of April, so that there is still time for those to see it who were not able to visit Rome last year. Even apart from seeing the exhibition, Mrs. Strong's article on it is worth studying as a *résumé* of the history of Roman rule in conquered countries. In an article on "Coins from the neighbourhood of a Roman mine in Spain" mention is made of an interesting discovery, in the lower workings of the mine, of a set of pumps of the

Roman period, evidently for the purpose of emptying the mine when flooded. They consisted of a series of "Archimedean" screws (spiral pipes wound round a cylinder superimposed in single sets, each set being provided with a tank or cistern into which the water flowed from the lower set, and from which it was lifted by the "screw" to the cistern above. Whether the authors of the article, who are archaeologists and not engineers, are justified in saying that these pumps "presuppose a knowledge of the laws of physics and a mastery of mathematical calculations of the highest order" may be doubted; a scientific mechanician would perhaps be less enthusiastic over them; but a discovery of mechanical contrivances of great antiquity is always of interest. An article on "The Catacombs of Callixtus in the light of recent excavations" gives the latest information on this collection of early Christian mortuary chapels, as they may be called, with a plan, and a photograph of the interior of the "Crypt of the Columns" with a column in each of its angles. The "Journal" is supplemented by a large number of plates, photographs, Roman sculpture and other objects.

The Essence of a Hollow Square.

WHEN the interpretation of ill-drafted by-laws is complicated with Scottish metaphysics, the conclusions reached are often such as those that are apt to emerge from the argument in Savoy opera. The other day the Scottish Court of Session was required to determine what was a hollow square. Hazy notions on this subject seem to have persisted from the time of Artemus Ward, who, upon a momentous occasion, "formed himself in a hollow square to resist the charge of the enemy." The Dean of Guild of Glasgow had refused permission to erect a building "within the enclosed space of back ground in a hollow square," and the applicant had appealed. In delivering judgment on the appeal, in the Court of Session the Lord President had some pleasantly ironical things to say about the Glasgow Corporation Act, of which the essence of the provisions was in question. In many ways, he said, these provisions were not models of draughtsmanship and they had had the peculiar result, he thought, that some of them were clearly unworkable, and that others would put with extraordinary hardship on certain individuals, practically making them, at their own expense or by confiscation of their ground, subscribe for a general benefit, whereas others, who were more fortunate, and who had done more to obstruct ventilation and so on than they had, would go scot free. If, he said, "the Corporation of Glasgow chose to have legislation of this sort, it was quite competent that their lordships, whatever they might think of it, had no option but to apply the words as they found them." As to the definition of a hollow square, he thought that the draughtsman of the Act came to grief between two stools. He naturally "wished to have something which could be equally applied to a hollow square which was only in the course of construction, and which could not be said to be a hollow square now; he also wished it to apply to an actual hollow square even although that hollow square was in many respects not hollow." We gather that the gentleman was between two stools. No doubt he will do better next time, after digesting the Lord President's ultra-philosophical explanation of the essence of a hollow square, as follows: "The essence of a hollow square was that it had got to be formed by streets—no doubt streets with buildings, the fronts of those buildings to be the streets; and then the backs of them were to be the space of what was called back ground. The square, which need not be a square at all, simply meant any continuous geometrical figure, the bounding line of which was formed by a set of streets which without any street piercing that geometrical figure. There was no definition of back ground, and one had to adopt the suggestion that all that could be said about back ground was that it was whatever was not front ground. From this luminous exposition it is clear that a hollow square *in posse* is not a hollow square *in esse*; that a ho-



THE GUARD HOUSE, BERLIN. KARL FRIEDRICH SCHINKEL, ARCHITECT.

square within the meaning of the Act (through or round which, perhaps the customary "coach-and-six" could be driven) is formed of streets, the fronts of buildings being streets, while their backs are space called back ground; that the square need not be a square; and that back ground is not front ground. With these data to guide him, the most muddle-headed of draughtsmen will have no excuse for going wrong.

A Study of Schinkel.

IN view of the fact that the neo-Grec style is receiving much attention at the present time, being regarded in some quarters as the means towards a truly national architecture, it is opportune that an article on so talented an exponent as Karl Friedrich Schinkel should appear in the February issue of "The Architectural Review" from the pen of Mr. A. E. Richardson. That Schinkel was a great architect is testified by such fine buildings as the Old Museum and the Guard House in Berlin, both of which display a true appreciation of Classic art blended with modern feeling. As Mr. Richardson says, Schinkel realised that to excel in architecture as one of the arts of design it was necessary to cultivate the others, if not in equal, at least in a secondary degree. Cockerell thought the same, and, in consequence, the architecture of both masters exhibits similar qualities. Schinkel's strictly architectural career may be said to date from 1810, in which year he was appointed one of the newly established Building Committee, and became a member of the Academy in Berlin. In 1816 he was commissioned to design a cathedral in commemoration of the general peace following the Napoleonic wars, but the design was for some reason abandoned. Next followed an inquiry into the condition of the fabric of Cologne Cathedral, which Schinkel completed in the same year; and in 1818 he erected in Berlin the Royal Guard House—his first building

of monumental character. Nothing could be more daringly original than his design for this building, the main façade of which consists of a hexastyle Dorian portico subordinated between pylons. "Not content with a mere reproduction of a Greek temple, he contrived an original composition, expressive of its purpose, full of character, and, in its rugged simplicity, eloquent of resistance and security. He disdained pedantry, and even eschewed the ordinary treatments of triglyphs for the decoration of the frieze; but he realised the need of a vertical *motif* in this feature, and substituted small 'victories' to obtain his contrasting lines."

In 1818 Schinkel also designed the new Schauspielhaus, or Royal Theatre, in Berlin. The exterior of this building is marred by the lack of proper subordination between the two pediments forming the centre feature of the main front, but the interior is very finely treated, an apartment of special interest being the concert hall, in connection with which it is safe to say that, with the exception of the small concert room at St. George's Hall, Liverpool, there are few extant of equal merit.

The Old Museum—Schinkel's masterpiece—occupied the architect for six years, from 1823-9. It is a building notable for its magnificent loggia of Ionic columns on the main elevation and for its great rotunda, or sculpture hall, the design of which is a version of the Pantheon.

Of the many other buildings which Schinkel erected, Mr. Richardson gives an extended account, the article being very fully illustrated, and in that respect of special value.

Other features of the February issue of the "Review" are some splendid drawings of Roman buildings by Mr. Walcot and an article on "The New Exchange in the Strand," by Mr. Godfrey, while current work is represented by the Regent Street Polytechnic, the Campbell-Bannerman Memorial in Westminster Abbey, and a fine chair and a floor memorial by Sir Robert Lorimer.

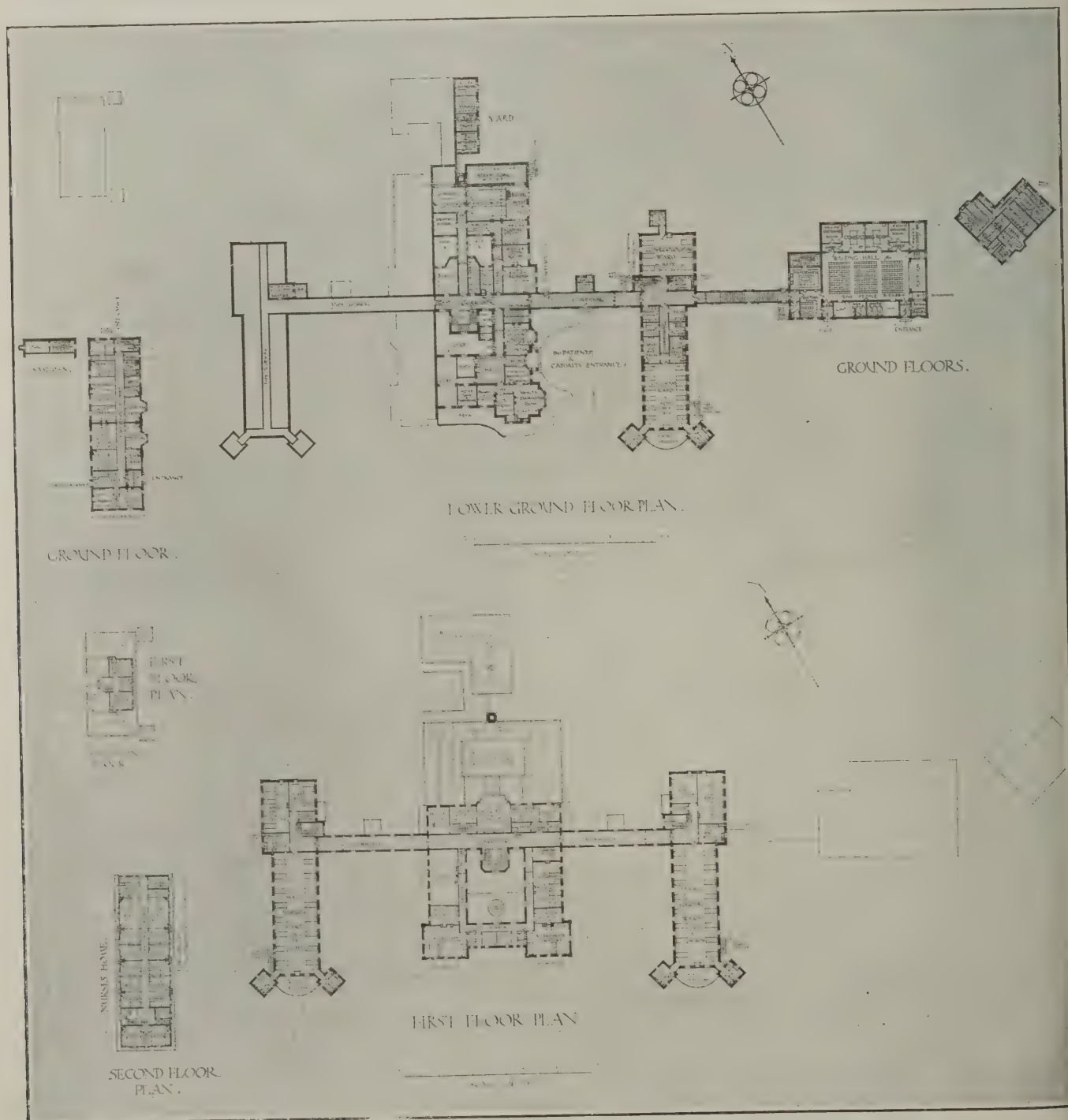
EAST SUSSEX HOSPITAL
COMPETITION

The East Sussex Hospital, on the front at Hastings, having outgrown its accommodation, and its situation having become less suitable by reason of the noise of the electric tramway and the increased traffic, it has been decided, as a memorial to King Edward VII., to erect a new hospital on a more commodious site at the corner of Bohemia Road and Cambridge Road. An open competition was instituted, with Mr. Edwin T. Hall, F.R.I.B.A., as assessor, and, as announced in our issue for last week, the following award has been made: 1st, No. 6, Messrs. John Saxon Snell and Stanley M. Spoor (conjointly), of London, W.; 2nd, No. 9, Messrs. C. K. and T. C. Mayor, of Manchester; 3rd No. 51, Messrs. H. Percy Adams and Charles Holden, of London, W.C. These

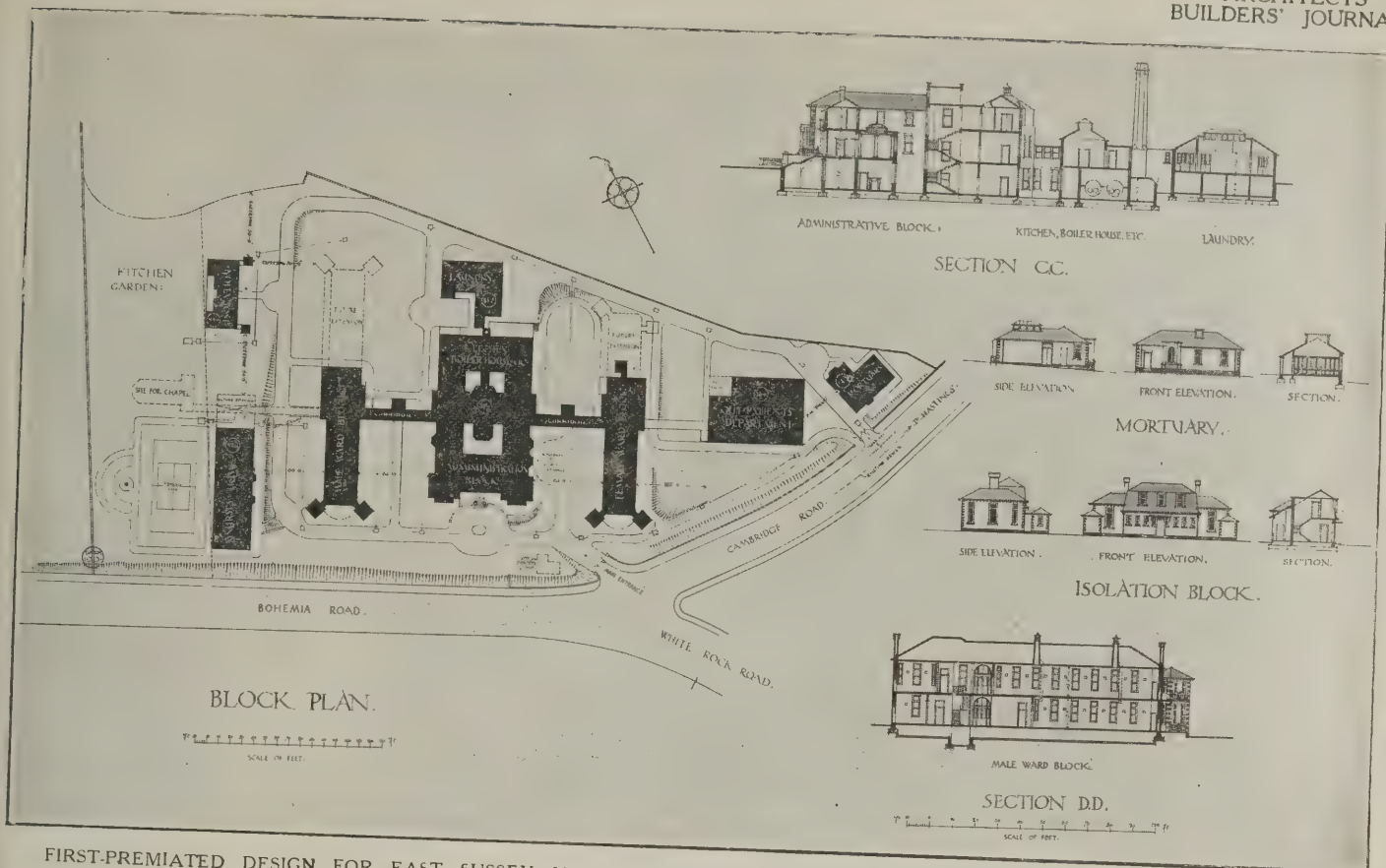
three designs we are able to illustrate in the present issue. All the designs submitted in the competition are on exhibition this week in the Drill Hall, Middle Street, Hastings, from Tuesday, the 13th, till Saturday, the 17th. The hours of admission are from 10 to 5, except Saturday, on which day the exhibition is open from 10 to 7.

The instructions issued to competing architects stated that the following requirements were essential: No building to be more than 15 ft. high, nor any isolation ward used for infectious cases to be erected on that portion of the property coloured green on the plan—that is, within 100 ft. of the north boundary wall. No building to be erected within 20 ft. of Bohemia Road. The hospital to contain 100 beds in the in-patient department, the buildings being so arranged as to be capable of extension in the future, and to be on the pavilion principle.

The plans to include in-patient hospital, out-patient department, nurses' home, isolation block, mortuary, p.m. room, laundry, outbuildings, and site only for chapel. The in-patient and out-patient department to be connected by covered way with the administrative block. The nurses' home to be a separate building with external entrance to the hospital without necessitating nurses to pass through the administration block. The in-patient pavilions to contain 5 main wards, and each to have one or more smaller wards in connection with it. Sister's separate room not required. The out-patient department to have a waiting hall to seat 200 with small platform (which could be used for meetings of governors, lectures, etc.), a consulting room at least 26 ft. long and divisible into two rooms by folding doors, two dressing rooms, recovery room, lavatories, porter's room or office.



FIRST-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS. JOHN SAXON SNELL AND STANLEY M. SPOOR, ASSOCIATED ARCHITECTS.



FIRST-PREMIATED. DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS. JOHN SAXON SNELL AND STANLEY M. SPOOR,
ASSOCIATED ARCHITECTS.

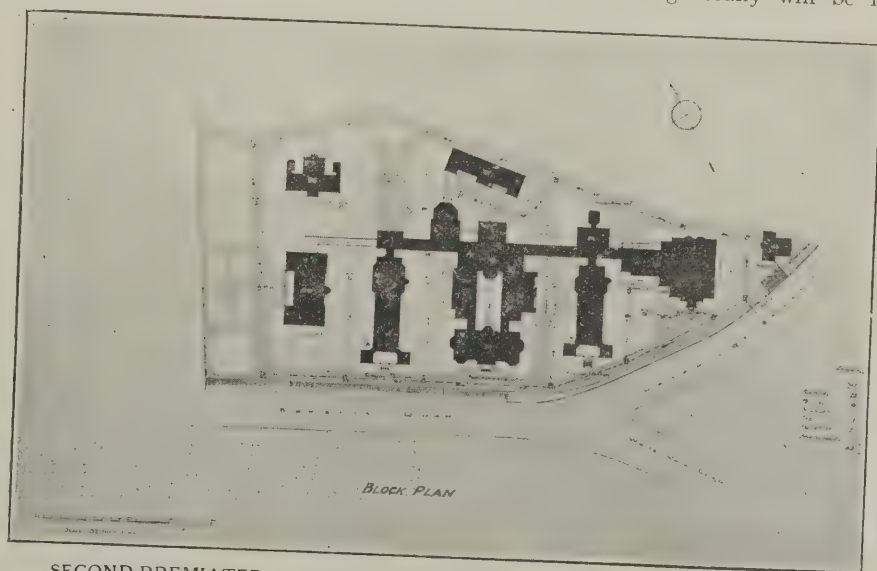
The following suggestions, among others, were made by the hospital committee: Teak floors for wards, terrazzo for corridors, etc.—all to have concave skirting. Sash windows (deep ledges hinged for lower part and hopper-hung windows above). Hollow walls, with special bricks for facing. Eye wards to have a north, or not sunny, aspect. Outside iron fire-escape staircases to all buildings of more than one storey, unless internal staircases are provided at each end. Balconies to the 5 wards to admit beds easily. Sanitary towers to wards built out from main blocks, with connecting passage well ventilated. Heating by hot-water radiators. Wards would have better appearance without centre block for fireplaces, but latter may be shown if thought desirable. Fireplaces at end or side of wards.

The following extracts are taken from the report accompanying the first-premiated design by Messrs. Snell and Spoor, illustrated on the centre plate in this issue:—

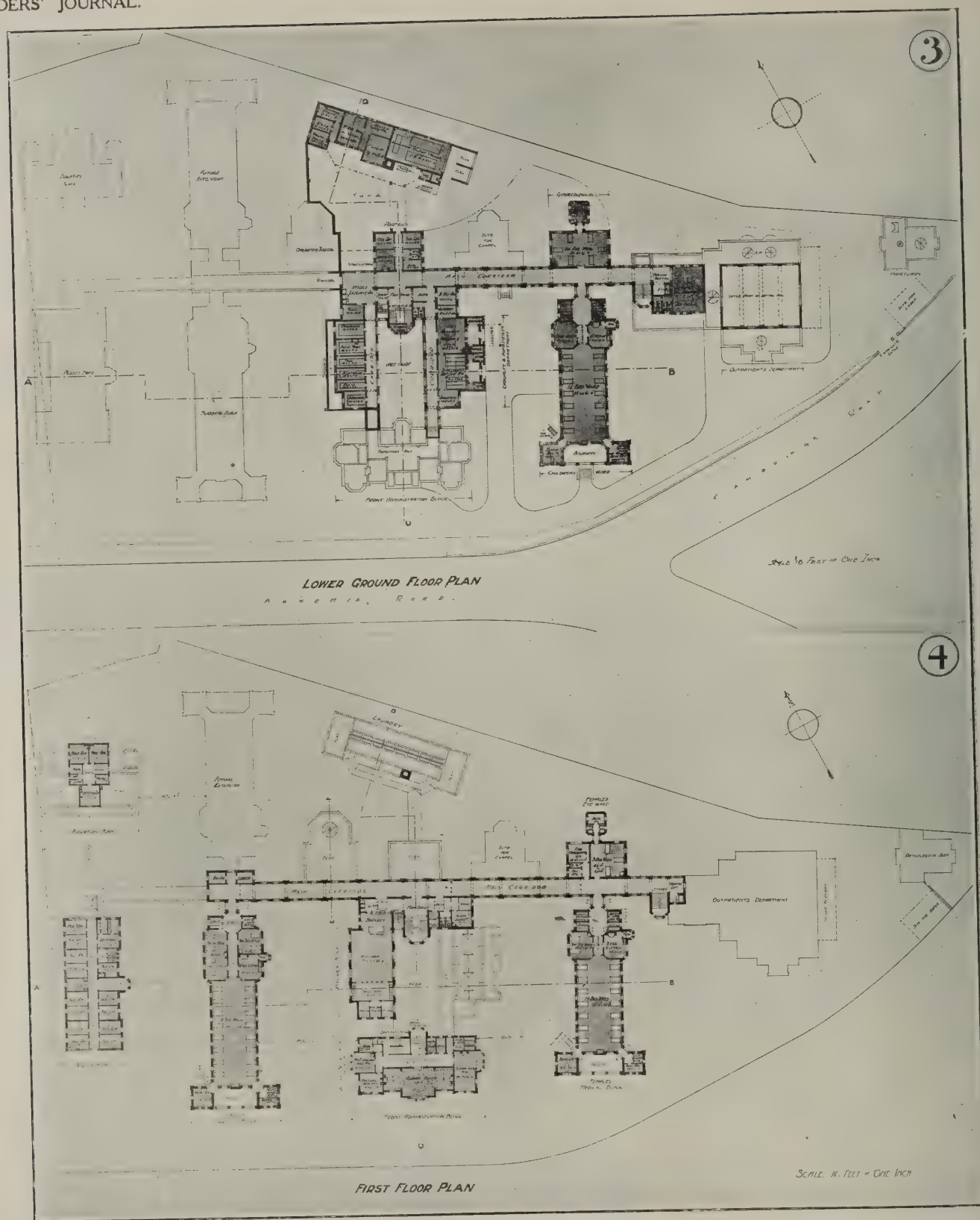
"The very great fall in the ground from west to east, the desire to keep the administration central, and the very definite instructions as to the provision of one lift only to serve all floors have necessitated the two or three floor corridors; it is hoped, however, that the provision of blow-throughs between each floor may be considered a satisfactory solution of an arrangement which otherwise might be considered regrettable. . . . The male and female ward blocks of the in-patient hospital call for little comment, and are of the usual pavilion type. The diversity in the units of each class of patient has presented some difficulty, and the design, especially of the smaller units, shows a lack of symmetrical arrangement which will no longer obtain when the hospital is enlarged. The surgical wards have been placed on the top floor in each pavilion for easy and level com-

munication with the operating room. The cubic contents of the wards allow each patient 1,400 ft. and upwards, children receiving a little over 1,000 ft. In the administration block two entrances have been provided, that on the ground-floor level being intended for the use of officers of the institution, the committee, and public visitors; the other, on the lower-ground floor, serving for in-patients, their visitors, and also for casualty cases. The main staircase and lift are placed centrally to serve the upper, lower, and middle corridors; it serves the operating room direct, and is also opposite to the service from the kitchen, and in the basement to the coal supply; it is of sufficient size to carry a bed with lift attendant and nurse. The isolation block is at the north-west angle of the

site, and allows 2,000 cubic ft. to each patient. The nurses' home is as far from the hospital buildings as the restrictions of the site will permit, and has a garden and tennis court adjoining. The mortuary is at that portion of the site which is farthest from the ward blocks and nearest to the town, being screened by the out-patients' department. The laundry is at the rear of the kitchen and offices, and is attached thereto by a covered way. A lower storey comprises disinfector, destructor, and a small steam engine for driving the laundry plant. As regards ventilation, electric fans will be provided in the operating room and the washhouse, while an ample number of inlets and outlets will be relied on for the ventilation of the remainder of the building. The inlets generally will be fixed



SECOND-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS.
C. K. AND T. C. MAYOR, ARCHITECTS.



SECOND-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS. C. K. AND T. C. MAYOR, ARCHITECTS.

about 7 ft. above the floor lines, and the outlets as near the ceilings as circumstances permit. Lighting will be by electricity, with emergency gas jets at different points, and heating will be effected by open fireplaces and low-pressure hot-water radiators. As regards the building itself, the walls generally are intended to be built hollow (except in protected places) in stock bricks and red facings and brindled brick quoins and dressings. In the ward blocks the floors of the wards will be of teak, the duty rooms being covered with linoleum on

cement, and terrazzo elsewhere. Indicated on the block plan are the maximum amount of ward extensions contemplated. After allowing for the displacement of existing ward units on the north side of the main corridor, due to the proposed enlargement, the net number of additional beds would be approximately as follows: Male ward block 32 beds, female ward blocks 32 beds. The cost is estimated at £43,783. This is in excess of the amount which competitors have been given to unders*and is at present available, but some very expensive finishings (teak

flooring and joinery, for instance, and a very liberal cubic allowance for a country hospital) are demanded, and therefore provided, but the cost of future extension has been very largely met in the present very ample accommodation—in many cases no further structural alterations being required at all; with the result that the cost of the completed hospital will average very considerably less per bed unit."

The estimate for the design placed second is £47,376, and for that placed third £36,889.

COMPETITIONS.

New Public Library, Stafford.

The awards in this competition are as follows: 1st, Messrs. Briggs, Wolstenholme and Thornely, Liverpool; 2nd, Messrs. Sutton and Gregory, Nottingham; 3rd, Messrs. Castle and Warren, London, W.C. Mr. Henry T. Hare, F.R.I.B.A., was the assessor. No fewer than 210 designs were submitted for this library, which is to cost £4,000. The designs were exhibited at the Borough Hall, Stafford, on Friday and Saturday last.

The New Legislative Buildings for Winnipeg.

The Government of Manitoba recently invited the Royal Institute of British Architects to appoint an assessor of the designs for their new Legislative Buildings at Winnipeg, which are to cost \$2,000,000 (about £411,000). The Institute, in recognition of the compliment conveyed in the request, asked their president, Mr. Leonard Stokes, to undertake the task, which he has agreed to do. Mr. Stokes, on his arrival in Canada at the beginning of April, will examine the sketches submitted in the preliminary stage of the competition. From those he will select the six most suitable for the purpose, and during a return visit to Winnipeg in the autumn will make his final choice from the completed plans sent in in the meantime. The competition is open to all British architects. The preliminary sketches have to be received in Winnipeg by the end of March. Substantial prizes will be given for the best six, whose authors will then be invited to send complete plans.

LIST OF COMPETITIONS OPEN.

FEBRUARY 17TH. NEW OFFICES FOR THE PORT OF LONDON.—The Port of London Authority invite preliminary sketch designs for new head offices in Trinity Square, and for lay-out of a building site. Sir Aston Webb, R.A., is the assessor.

FEBRUARY 17TH. ELEMENTARY SCHOOL, YORK.—The City of York Education Committee invite competitive designs for a public elementary school to be built in Camplashon Lane, Bishopthorpe Road. Assessors, Messrs. T. Mellard Reade and Son, Liverpool. Apply, J. H. Mason, secretary, Education Offices, Clifford Street, York.

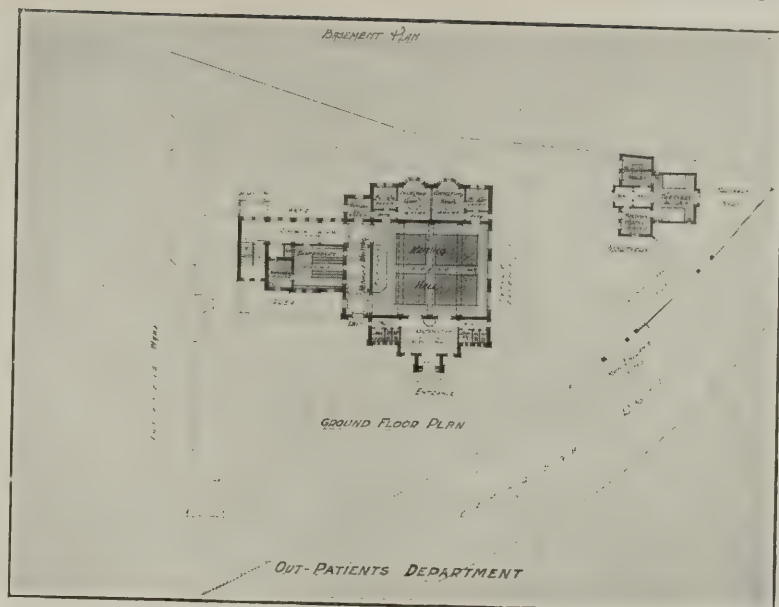
MARCH 15TH. LAYING OUT ESTATE, PRESTATYN.—Designs for laying-out the

Prestatyn Estate are invited. Premiums of £50, £30, and £20. Application (with 19s. 6d. deposit, returnable) was to be sent by January 8th to Lord Aberconway and the Trustees of the Prestatyn Estate, 33, Henrietta Street, Strand, W.C. Designs by March 15th. Judge, Mr. H. V. Lanchester, F.R.I.B.A.

MARCH 16TH. PUBLIC OFFICES, HARROW.—Harrow-on-the-Hill Urban District Council invite designs for enlargement and alterations of their public offices, at a cost not to exceed £4,500. Premiums, thirty, twenty, and fifteen guineas. Plan and instructions (£1, returnable) from Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, Council Offices, Harrow-on-the-Hill. R.I.B.A. will be asked to appoint an assessor.

MARCH 25TH. SCHOOL, COLCHESTER.—The Borough of Colchester Education Committee invite architects practising within the borough to send in Competitive Plans for a School for about 750 children, to be erected on a site in Hamilton Road, Colchester. Plans must be delivered by 12 o'clock noon on March 25th. Apply to Ernest H. Bultitude, Clerk, Education Offices, 8, East Stockwell Street, Colchester.

MARCH 31ST. NEW PARLIAMENT BUILDINGS, WINNIPEG.—Regulations governing the competition for the new Parliament buildings for the City of



SECOND-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS.
C. K. AND T. C. MAYOR, ARCHITECTS.

Winnipeg may be had from the High Commissioner, for Canada, 17, Victoria Street, Westminster. [The date formerly announced for the close of this competition has been extended to March 31st. Mr. Leonard Stokes, P.R.I.B.A., has been appointed assessor.]

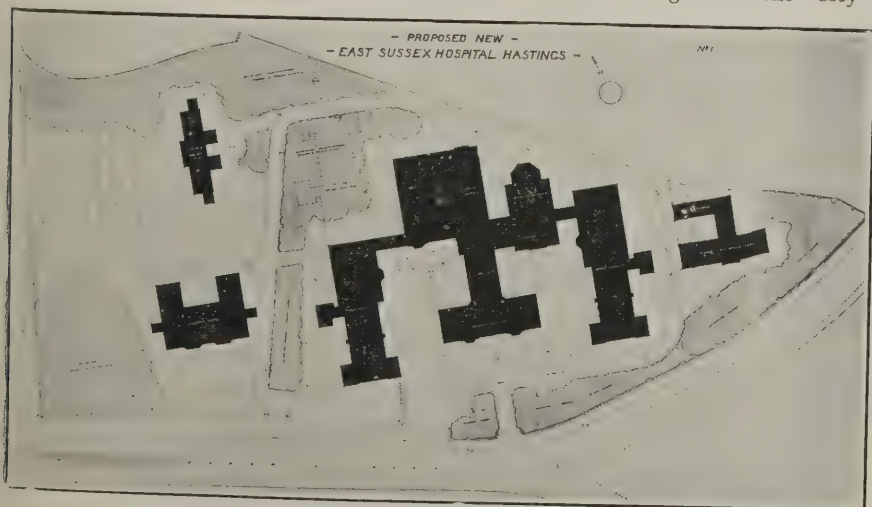
APRIL 4TH. COUNCIL OFFICES, PORTLAND.—Portland U.D.C. offer premiums of £50 and £10 respectively for first and second designs. Particulars (deposit 10s. 6d., returnable) from R. A. Cole-nutt, Clerk to the Council, Offices, New Road, Portland.

APRIL 20TH. BIRMINGHAM BLUE COAT SCHOOL.—Competition strictly limited to Birmingham architects. In a preliminary competition, three designs will be selected, and the authors will be paid £50 each to develop and redraw their plans to a larger scale, showing further details. In the event of the Governors failing to proceed with the second competition, the authors of the three designs will be paid £25 each. Assessors, Mr. G. H. Hunt, F.R.I.B.A., of London, and Mr. Charles E. Bateman, F.R.I.B.A., hon. consulting archt. to the Governors. Drawings to be delivered by mid-day of April 20th to Mr. William E. Bolton, Secretary, The Blue Coat School, Birmingham.

JUNE 28TH. TOWN PLANNING. Hale. —Premiums of £50 and £25 are offered for a town-planning scheme.—Address Council Offices, Hale, Cheshire.

AUGUST 30TH. THE HENRY SAXON SNELL ESSAY.—The Henry Saxon Snell prize of fifty guineas and silver medal of the Royal Sanitary Institute is offered for an essay on "Suggestions for Improvements in the Ventilating, Lighting, Heating, and Water Supply Appliances and Fittings for an Operating Room and its accessory rooms for a General Hospital of 400 Beds (no Students)." Essays (in which two competitors of different professions or crafts may join) to be delivered before 4 p.m., August 30th, to the Secretary, Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., from whom full particulars may be obtained.

NO DATE. ELEMENTARY SCHOOL, WARRINGTON.—The County Borough of Warrington Education Committee invite designs for the erection of a public elementary school. Deposit, £1 is. (returnable). Apply J. Moore Murray, Secretary and Director, Education Office Sankey Street, Warrington.



THIRD-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS.
ADAMS AND HOLDEN, ARCHITECTS.

CORRESPONDENCE.

*What the Building Trade Wants.**To the Editor of the ARCHITECTS' AND
BUILDERS' JOURNAL.*

SIR,—I have read with much interest the articles in your recent issues upon the education and status of employers in the building trade, and the possible governing functions of the Institute of Builders in connection therewith.

I entirely agree with your correspondent who pointed out that public opinion needs to be educated upon the matter. Until it is recognised that the person who sells a badly built house is just as fraudulent and criminal towards his fellow-citizens as one who retails unwholesome food, we cannot hope for the conferment of any powers such as would be necessary to establish the restrictive and governing action you foreshadow, and such as was exercised by the trade guilds from the fourteenth to the seventeenth centuries.

The information you print as to what is obtaining in Germany is particularly interesting. We have a good deal to learn from our friends across the North Sea; but in the matter of public facilities for technical education, both of workmen and those who direct them, it is a pleasing fact that the opportunities open to the present-day youth, in London at any rate, are tremendously in advance of those available during the pupillage of,

Yours faithfully,

Station Works, F. HIGGS.
Hinton Road,
Herne Hill, S.E.

PICTURE EXHIBITIONS.

Messrs. Tooth and Sons' Gallery.

At this gallery there is a collection of paintings by the late Josef Israels, which enables one to compare his style in early and late periods of his work. The first picture in the catalogue, "The Widow," is the last he ever painted, a month or two before his death. It represents the widow and her children driving the cow to pasture, in a very sombre landscape; but it is evident that when he painted this his hand and eye were failing, as far as execution is concerned. The most important picture in the collection, the interior called "The Anxious Family," is in the artist's finest style; he painted a smaller replica of it in a neater and more finished style, which is in the same room; it looks like an earlier work in regard to style of execution, but is probably not; Israels was rather given to painting smaller repetitions of his important pictures. We should take it that the solidly painted head of "A Fisherman" is an early work, before the painter had come to his real style. "A Friendly Visit," on the other hand, illustrates rather too strongly the artist's later tendency towards sombre and gloomy tone of colour in his interior scenes. Some of the small open-air scenes are refreshingly bright and sparkling, especially "Swimming the Dog," a breezy little landscape which one would hardly have taken for Israels'. The exhibition is a very interesting one.

The Goupil Gallery.

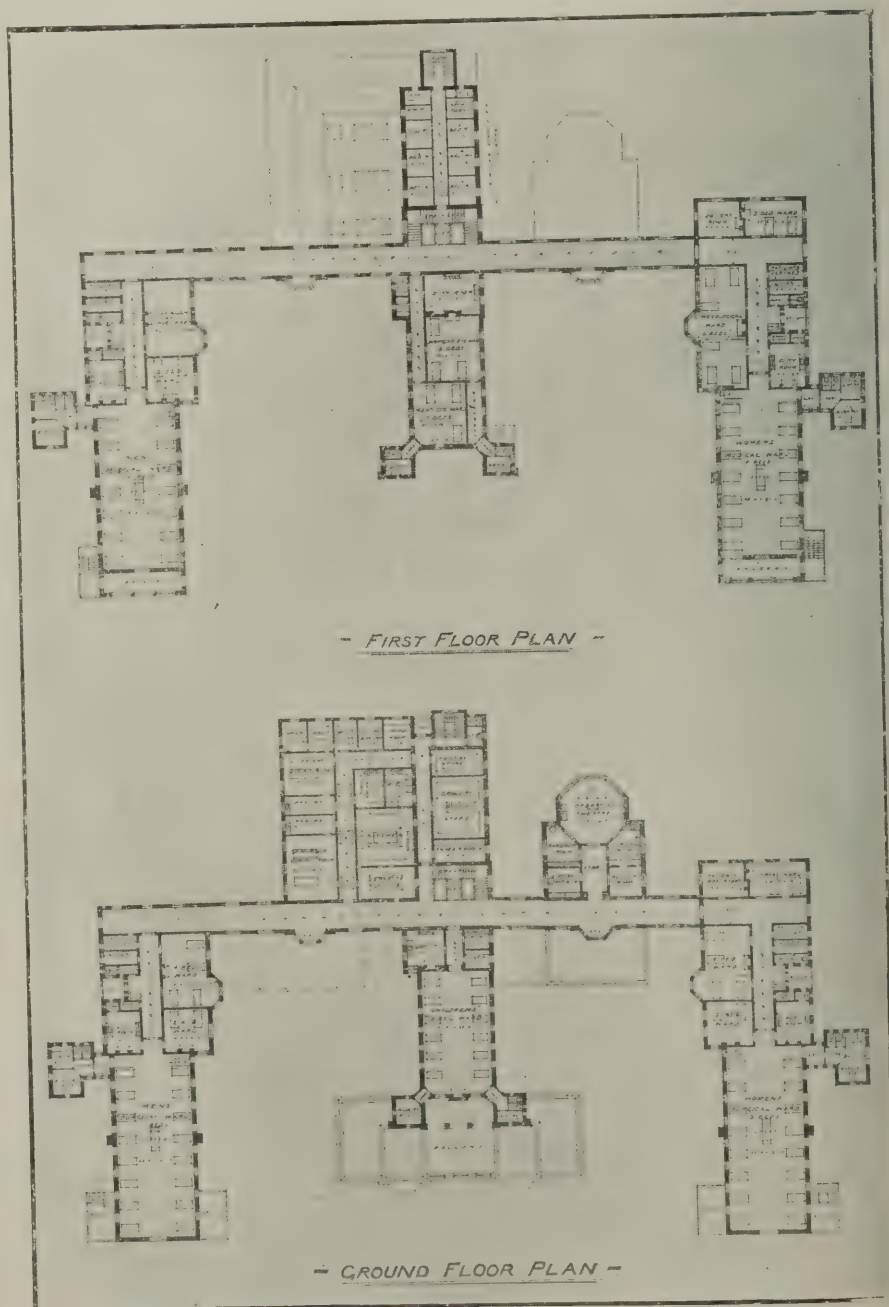
There is an exceedingly interesting exhibition at the Goupil Gallery of the works of a very talented painter, the late W. Christian Symons, who never enjoyed in his lifetime the success or reputation

which his talents certainly merited. His water-colours, especially the landscape sketches, show a great freedom of style and knowledge of open-air effect; witness "A Sussex Sky," "The Old Cannon," "Cloud Study," "The Thames at Chelsea." Mr. Symons carried out some mosaics for Westminster Cathedral, some of the studies for which are here, but do not impress us very much; they are in an assumed mediæval style with which we have not much sympathy; but they are things better judged of in execution as mosaics than in small-scale water-colour studies. The oil-pictures are not so good in point of style as the water-colours; there is a dry *facture* about them, which reminds us of the same quality in the late Mr. Charles's pictures; and possibly it may be that this quality, which does not tend to make pictures generally attractive, may have had something to do with the want of popular success of both painters. The landscape called (from the foreground figures) "Little Boy Blue and Red Riding Hood" is a capital landscape in composition and in open-air effect, but it is, owing to this dry manner of execution, somehow

wanting in charm. There are a good many clever and interesting things among the oil-paintings, however, including what may be taken to be a portrait group of children ("The Young Electricians"); and the whole exhibition leaves the impression of being the work of a painter of exceptional ability.

The Carfax Gallery.

We so often find the Carfax Gallery the depository of works that may be described as more curious than beautiful that it is a gratification to find in the exhibition of landscapes by Mr. Elliott Seabrooke a set of pictures and studies in which one can really take pleasure. His best powers seem to lie in seizing the composition and sentiment of stern and rugged mountain scenery, as in painting the solid rampart of "Rainsbarrow" and the dark sloping masses of "Langdale Pikes." "The Icknield Way," a snow-scene with a sky of remarkable power, is another impressive painting. Some of the small studies of landscape, in low tones or in monochrome, are very interesting, and they all show a distinct feeling for landscape composition.



THIRD-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS.
H. PERCY ADAMS, F.R.I.B.A., AND CHARLES HOLDEN, A.R.I.B.A., ARCHITECTS.

OBITUARY.

Mr. William Glover, F.R.I.B.A.

At the last meeting of the R.I.B.A., held on February 5th, Mr. Henry T. Hare announced with regret the decease of Mr. William Glover, Fellow, elected 1899. Mr. Glover was a past-president of the Northern Architectural Association, and represented that body for a time on the Council of the Institute. He was well known for his generous gifts and benefactions to the Northern Association, to the Architects' Benevolent Society, to the King Edward VII. Hospital at Windsor, to the Laing Art Gallery, Newcastle, where he founded a fund for the purchase of works of local artists, and to various other institutions, educational and charitable. Mr. Glover, who retired from practice about twelve years ago, was eighty-two years of age.

The decease was also announced of Mr. Francis William Humphreys, Associate 1880, Fellow 1892, and Mr. John Todd, Associate 1880.

Dr. David Christison.

By the death of Dr. David Christison, which occurred recently, at his residence, 20, Magdala Crescent, Edinburgh, Scotland loses one of her foremost antiquaries. He was born in Edinburgh on January 25th, 1830, so that he had nearly completed his 82nd year. After taking the degree of M.D. at Edinburgh University, at the outbreak of the Crimean War Dr. Christison went out to minister to the wounded. After that he devoted himself to the study of scientific archaeology, of which he was one of the pioneers. In this sphere he found work once congenial and valuable, and in 1906 his University conferred upon him the honorary degree of LL.D. in recognition of his services. The fruits of his research were afterwards gathered by the Society of Antiquaries of Scotland, of which he was secretary for 16 years, from 1888 to 1904. He travelled over a great part of Scotland planning the prehistoric forts and minutely examining them, and the results of his investigations he contributed in many interesting papers to the Society of Antiquaries. About 10 years ago he was Rhind lecturer, and chose as the subject of his course "The Prehistoric Forts of Scotland." These lectures were published in book form. "Early Fortifications in Scotland" was another of his works.

FIRE PROTECTION AT HAMPTON COURT PALACE.

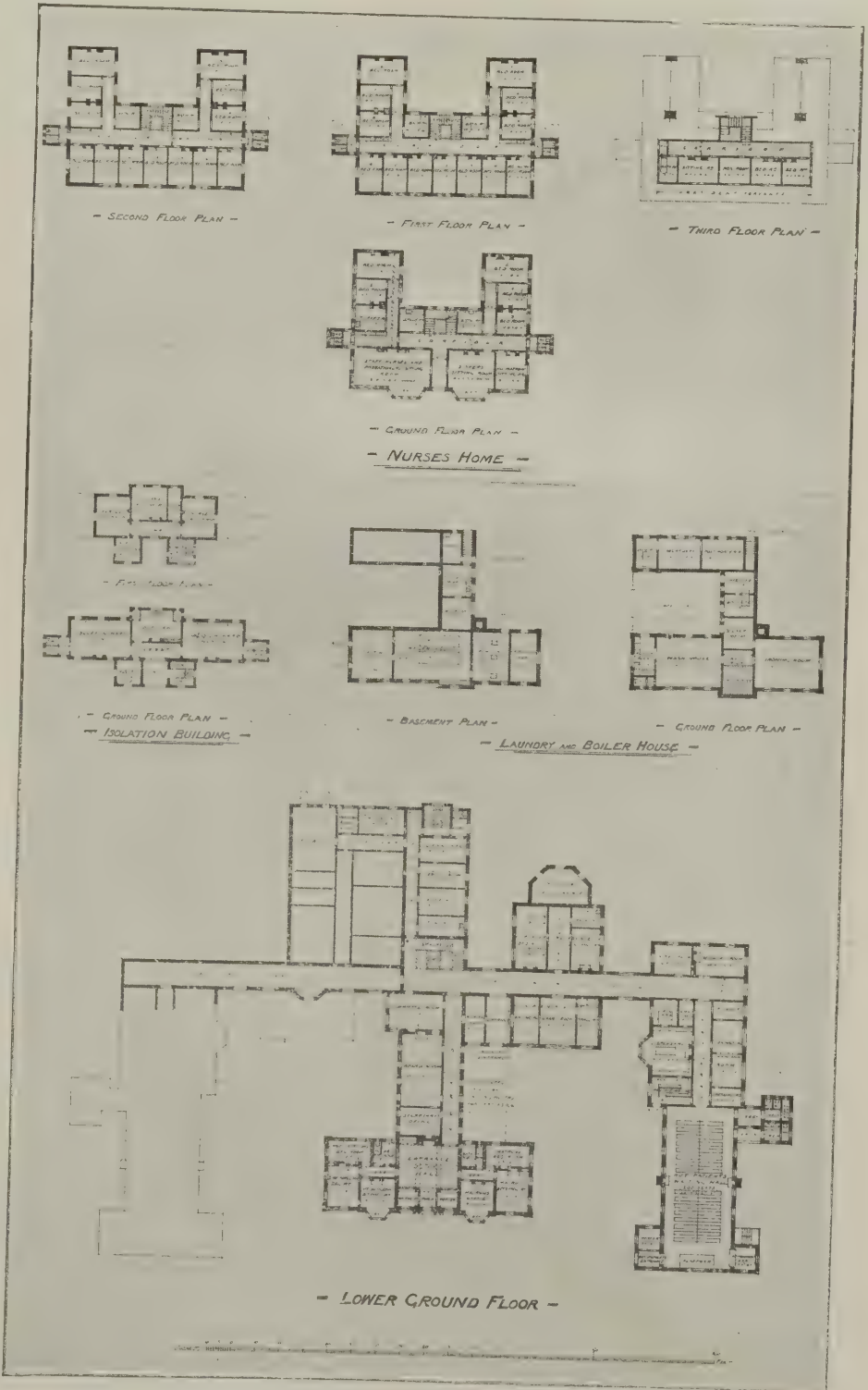
At the instance of the Office of Works, a scheme is now being carried out which will bring the protection of Hampton Court Palace from fire thoroughly up to date. The work of laying new water mains which are to furnish a high-pressure supply has been put in hand by the Metropolitan Water Board, who are carrying a 15 in. main from the Flower Pot in the Hampton Court Road right along the main walk in front of the Palace. In this large main there will radiate several 9 in. mains, while 4 in. distributing pipes will convey the water to all parts of the buildings. The pressure maintained in the pipes will suffice to carry water to the highest part of the Palace, and plugs and hydrants will be placed in convenient positions for immediate use.

A complete system of electric fire alarms will enable instant communication to be made with the Palace Fire Brigade, the members of which have the advantage of an intimate acquaintance with the buildings. The Palace has also been placed in direct telephonic communication with the Kingston Fire Station, where there are two powerful motor fire-engines which could reach the Palace within a few minutes of an outbreak. The Palace Brigade is being strengthened by the addition of three expert firemen who are ex-members of the Metropolitan Fire Brigade, and one of these men will always be on duty at the fire station in the precincts of the Palace. For their accommodation, three new cottages are to be built in the grounds adjoining the Palace.

NEW BOOKS.

Spirit Varnishes.

To those who are avid of hard facts, the modern facilities for tracing the origin of materials and the particulars of processes may be accounted an intellectual boon. For such persons—and their name is legion—there is a satisfaction of the mind in finding out, as nearly as may be, all that has been ascertained about the things with which one is specially interested. For example, the man who is constantly handling, or even only specifying, varnishes of one kind or another may, and often does, feel impelled to penetrate as deeply below the surface as he reasonably can, in order that he



THIRD-PREMIATED DESIGN FOR EAST SUSSEX HOSPITAL, HASTINGS. H. PERCY ADAMS, F.R.I.B.A., AND CHARLES HOLDEN, A.R.I.B.A., ARCHITECTS.

may be informed what the varnish is, whence it comes, its physical properties, its natural history, and the philosophy of its manufacture or preparation for use. The book under notice is extremely interesting, if only from this point of view, although it is doubtless more trenchant in its appeal to those whose keenness of enquiry is mainly commercial. A good deal of rather fascinating nature study, however, goes to the account in either case, whether we regard, for instance, the vegetable, mineral, or animal origin of the various products, or their chemical or other conversion to the final form in which they are applied. It happens that the natural history of spirit varnishes is exceptionally interesting. One of the most interesting chapters is that which deals with shellac, "the raw material *par excellence* of the spirit varnish maker." It is a secretion of the *Tacchardia lacca*, an insect allied to cochineal. Shellac consists of wax, colouring principle, and pure resin. The life-history of the insects is carefully narrated in the book, and is a very curious study, having in it certain elements of doubt and obscurity which render the subject by so much the more fascinating. That the resin is not an exudation of the tree, but a secretion of the insect itself, is a generally accepted opinion, but does not seem to have been finally established as a fact; nor is it beyond debate whether the different qualities of lac are due to varieties of the insect or to the different plants on which it feeds.

The chemistry and the methods of manufacture of the various kinds of varnish are described in considerable detail, and, as a rule, the names and dates of the various inventors and discoverers are conscientiously given. One interesting historical item corrects the common impression that benzol was "first discovered in its present grand source—coal-tar." Benzene was in fact discovered in 1825 by Faraday, who separated benzol by fractional distillation from the vapour produced by passing certain oils through red-hot tubes. The coal-tar process was elaborated by A. W. Hoffmann (1845), and, in Hoffmann's laboratory, by Mansfield in 1847.

Such particulars as those to which attention is here drawn are, however, merely subsidiary. The bulk of the book is occupied with purely practical matters. The amplified English version, like the French original, may, in fact, be regarded as a standard work—a veritable mine of information for the manufacturer, who will value it none the less because, unlike most technical treatises—at all events, unlike such as do not owe their inception to French authors, who have a happy knack of writing agreeably as well as clearly—it is really interesting to read, whether or not the reader has the intention of turning the information to direct practical account.

The Manufacture of Varnishes, and Kindred Industries. Based on and including the "Drying Oils and Varnishes" of Arc. Livache. By John Geddes McIntosh. Second, greatly enlarged edition, in three volumes. Vol. iii.: Spirit Varnishes and Spirit Varnish Materials. London: Scott, Greenwood and Sons, 8, Broadway, Ludgate Hill, E.C. Pages x. + 482, 8½ins. by 5½ins., 12s. 6d. net.

The Natural History of Clay.

Anyone harbouring the perfectly natural delusion that but little can be said about so seemingly simple a substance as clay will be surprised at the extent and variety of interest comprised in Mr. Alfred B. Searle's manual on its natural history. Clay, in truth, is by no means so simple as it seems to the layman, and

certain of its properties present problems which are as yet unsolved, chiefly because of "the inertness of the materials at ordinary temperatures, and the ease with which the clay molecule appears to break down into its constituent oxides at temperatures approaching red heat, or as soon as it begins to react with alkaline or basic materials." Nor is it easy either to define the true nature of plasticity or to secure its accurate measurement. These and other matters are discussed in a very interesting manner by Mr. Searle, who has produced a treatise in which much may be learned about every variety of clay, even by those who are most familiar with the uses to which it is put in the various fictile arts and manufactures, from the making of stock bricks to the production of the finest kaolin ware.

The Natural History of Clay. By Alfred B. Searle. Cambridge: At the University Press. Pages viii. + 176, 6½ins. by 5 ins.

Smoke Prevention.

The architect, of all men, has most reason to be keenly interested in the means of smoke abatement, not only when he is designing the buildings which create smoke, but even more especially when his aesthetic effects suffer a mere eclipse from it. The authors of "Smoke Prevention and Fuel Economy" believe "that coal of bituminous quality is capable of perfect combustion, and that black smoke is merely so much evidence of improper design and work," and in the book they present abundant reasons for the faith that is in them. Architects, whether they are doers or sufferers, or both, in the matter of imperfect combustion, will be glad to learn from this book all that seems to be certainly known on the subject.

Smoke Prevention and Fuel Economy (based on the German Work of E. Schmatolla). By Wm. H. Booth, M.Am.Soc.C.E., and John B. C. Kershaw, F.I.C. Second edition, revised and enlarged. With seventy-nine illustrations. London: Constable and Co., Ltd., 10, Orange Street, S.W. 232 pages, 8½ins. by 5½ins., price 6s. net.

Three Technical Manuals.

"Ship Wiring and Fitting," (a) by T. M. Johnson, is one of the excellent series of "Installation Manuals" that are being issued by Messrs. Constable, and is characterised by the same practicality and thoroughness of treatment as its forerunners. The special problems that present themselves in wiring a ship for lighting, telephoning, and ventilating by means of electric fans, are dealt with very lucidly and in complete detail.—A fourth edition of Mr. J. T. Cowderoy's "Pocket Notes and Remembrancer for Sanitary Inspectors and all engaged in Public Health Work" (b) is in effect a sufficient testimony to the utility of this well-arranged and very complete little manual, in which, we note, the "health-worker's interest in the Town-planning Act" is duly considered.—Mr. Horace M. Lewis has produced a small manual (c) on builders' quantities that will serve as an admirable introduction to the subject, giving the student a solid groundwork upon which to build a sound superstructure of further knowledge. The elementary operations of measuring areas, and of taking off the quantities for the various trades, are carefully explained, and examples of billing are added.

(a) Ship Wiring and Fitting. By T. M. Johnson. London: Constable and Co., Ltd. 1s. net.

(b) Pocket Notes and Remembrancer for Sanitary Inspectors and All Engaged in Public Health Work. By J. T. Cowderoy. Fourth edition, revised and enlarged. London: The Sanitary Publishing Co., Ltd., 5, Fetter Lane, E.C. 2s. net.

(c) Builders' Quantities. By Horace M. Lewis. London: E. and F. N. Spon, Ltd., 57, Haymarket. 1s. 6d. net.

MODERN HOUSE PLANNING.*

BY A. G. R. MACKENZIE.

When I was asked to read a paper on the subject chosen ("That Modern House Planning tends to Over-elaboration") I consented to take the negative side, leaving the positive side to be brought out in the discussion.

Of all the characteristics of the modern house, the most striking when compared with the planning of former times is the multitude of purposes which it serves. Keeping pace with our more complicated ways of living, we have not only greatly increased the number of rooms, but have assigned to each a special purpose. Instead of the hall and single chamber of the Middle Ages, with which even kings were content, every ordinary house must have a number of separate bedrooms, at least three public rooms, and a complicated arrangement of servants' offices, with the development of civilisation we could not now live in those old palaces in which the only communication for a suite of rooms was by passing through each in succession.

I do not propose to trace the history of the house from prehistoric times, but merely to refer to the advent of prosperity in the times of Elizabeth, when the system of planning was revolutionised; and the house, which previously consisted of more or less detached buildings round a central courtyard, was made one by connecting all the parts together by means of corridors or galleries. It was to this period that Mr. Norman Shaw and his contemporaries reverted when forty years ago they awakened the architectural world to the realisation that modern houses *could* be planned with the spirit of the ancient work and with the comforts which modern conditions demand. It is to them also that to some extent the initiation of the recent movement of the planning of smaller houses may be traced—at any rate, they were the first to realise the possibilities of the good architectural treatment of the smaller suburban house, which, now that garden cities have come into existence, has become so interesting a subject to the man in the street and his wife as well as the architect. We are now considering whether over-elaboration is a demerit or simplicity a merit, whether the present tendency is to over-elaboration—and I contend it is not regard elaborate planning as not necessarily leading to elaborate results. It is to say, that a house which looks simplest in the world may, to attain that simplicity of effect, have caused more elaborate planning on the part of the architect. An elaborate house is the same thing as an elaborately planned house: the one conveys the idea of complication, the other simplicity in considered result.

Although an elaborately planned house does not always bring simplicity, a house that is planned without due elaboration or consideration of detail certainly only bring simplicity of effect by sacrifice of comfort. Bacon says so where in one of his essays: "Houses made to live in, not to look upon." The ideal house is, first, one which is comfortable to live in, and, secondly, fair to look upon. The one follows the other.

Of the works of man that approach more nearly to nature in their perfect

* Extracts from a paper read before the Architectural Association on January 29th.

one may instance sailing ships; these have not been designed to look beautiful, but have become so by the process of elaboration and elimination which has continued through centuries till this ideal has been reached. And so it is with house buildings. The planning is the key to the situation, and it is by elaboration and elimination of everything that has not a *raison d'être* (for elaboration includes elimination) that the perfect house is attained. That there are numerous examples of over-elaboration is true, but that some have fallen into traps ambushed by the wayside does not affect the general forward movement.

When Professor Reilly, at the Architectural Congress, made his plea for a more classical treatment of the Garden City, I confess I was captivated by the plea, and saw in my mind's eye relief from continual picturesque bits and fussy detail (it is curious how pleased one is with one's own happy thoughts in picturesque features, and how impatient one is with other people's). I was captivated by the idea of a Georgian Garden City designed with due regard to axiality and symmetry. That great dignity can be obtained by axial planning goes without saying; the architects of the Georgian period knew this, and those who allow them now recognise the value of the vista and balance. How far this can be carried, however, in the smaller house, is to my mind a very debatable question.

An elaborately planned house is to my mind one in which everything is considered so that there is no waste of material, and useless space is reduced to a minimum. This is particularly true of smaller houses. Indeed, the smaller the house the more elaborate should be its planning.

As an illustration, I would take the question of cupboards. In small houses inhabited by people of moderate means, it is much more necessary to fit in cupboards to every possible nook or corner than it is in larger houses where space is so valuable, because in the former case not only is every inch of space required, but the cost of purchasing furniture, such as wardrobes, becomes a consideration. In the larger houses the elaboration of planning would probably consist in the fittings suiting the decoration.

Garden cities have led to the study by architects of small houses, and the elaboration of planning which has followed has all been to the good. If one compares the best, or even the average houses designed by architects at the recent exhibition at Gidea Park, with the builders' erections ten or fifteen years ago, it is ludicrous to maintain that there is any tendency except towards improvement.

Two houses in Gidea Park [of which designs were shown by the lecturer] are an excellent illustration of my contention that elaboration leads to apparent simplicity, and showing how misleading it is to talk about a simple little house as the simplicity was attained by obvious methods. They show how, by an elaborate arrangement of chimneys and clever distribution of the rooms, a very simple external effect is obtained, while the heat is conserved for the benefit of the room.

How much more simple to plan a house with all the chimneys in the walls, how much less pleasing is the result! Although the author of the Gidea Park example has described it as "planned in the simplest possible manner," prob-

ably it would have been more accurate to have said "planned with much thought and elaboration, eventually arriving at a simple result."

In the larger houses of to-day the same principles of planning are being applied, though the object of the elaboration may not necessarily be directed so much to questions of economy, towards obtaining the most efficient result with the minimum of space and expense, as to additional luxury and obtaining a fine architectural building with the maximum of luxury and convenience for the owners.

We must take our clients as we find them; and the question which architects have to solve is not how a rich country squire can so modify his requirements that a quiet, dignified, and beautiful house can be built for him, as how to build him a house and still give him all the conveniences and luxuriousness he desires. By the facilities for intercommunication now available, among other reasons, life in country houses has become much more complex than it was in the past. Huge house parties can easily be gathered together, and their successful entertainment greatly depends on the provisions made by the architect, more particularly perhaps in the servants' quarters. Ladies now take a much greater part in life generally, and their not being banished to their withdrawing rooms has led to the development of the hall, where they and the men can meet, and both can come

and go without formality. That this apartment has to be a sitting-room, sheltered from draughts, and yet still the hall of the house, has led to much ingenuity in planning.

The necessity for bathrooms and suites of rooms which may or may not be used in connection with each other also leads to further complications. [This was illustrated by an American plan.]

The desire for unlimited fresh air is a consideration which is daily becoming more urgent. No one now sleeps with his or her window shut, and the fresh-air habit, like any other, tends to grow. To a person who habitually sleeps with both windows and door wide open, it is perfect torture to be closed up, and to waken in the morning with the feeling of oppression that want of fresh air gives; it is all a matter of habit, and this habit is on the increase. Very soon the desire for open windows will lead, as it already has done in America, to the provision of sleeping balconies attached to the bedrooms, surrounded by a dwarf wall and open on two or more sides, so that by means of shutters the side sheltered from the wind that may be blowing can be left open, and the others closed. The American plan shows one example of this, and also a sun parlour, which I take it can be used for meals in hot weather. Some American plans show loggias facing east and west available for this purpose, whichever quarter the sun



SLEEPING PORCH TO HOUSE AT EVANSTON, ILLINOIS, U.S.A.
W. A. OTIS AND EDWIN H. CLARK, ARCHITECTS.

is in, and the balconies over are ready to be converted into sleeping balconies, with the addition of roof and shutters. I feel now there is a great future for the open-air room, not merely a veranda, but wide enough, at least 10 ft., to have dinner served in. I anticipate that when these have been provided the next demand will be for places where one can take an air or sun bath.

But, to conclude, there can be no doubt that the subject of domestic architecture is one which interests us as English architects more nearly than any other; if one looks for fine general planning and magnificent public buildings designed on a scale to impress the mind with the greatness of the nation, one is disappointed. It is in domestic architecture that England excels, and I claim that it is by continual study and elaboration of planning that this reputation has been built up, and it is by that alone that it can be maintained in the future.

DISCUSSION.

Mr. G. H. Jenkins said that evidently Mr. Mackenzie had defined "elaboration" as the process of improving and refining by successive operations. They would therefore all agree that modern house planning did *not* tend to over-elaboration. He was of the opinion that modern house planning generally tended to over-elaboration on the wrong lines. Mr. Jenkins said he would like to contradict

the heresy which was being constantly preached by certain of the younger school of architects, that beauty was not a thing to be sought for its own sake, but was only a side issue—a something which could not be attained by effort.

Mr. Mackenzie stated that the ideal house was, first, one that was comfortable to live in, and, secondly, fair to look upon. A house, said the speaker, could not be comfortable if it was not fair to look upon, as, if everything was displeasing to the eye, peace of mind would not accompany ease of body. The modern house, he thought, was sufficiently elaborated to ensure its being beautiful as well as convenient. Beauty, however, was only a secondary consideration instead of being of equal importance with convenience in producing the ideal home. If we did not realize this, we should tend to fall behind times.

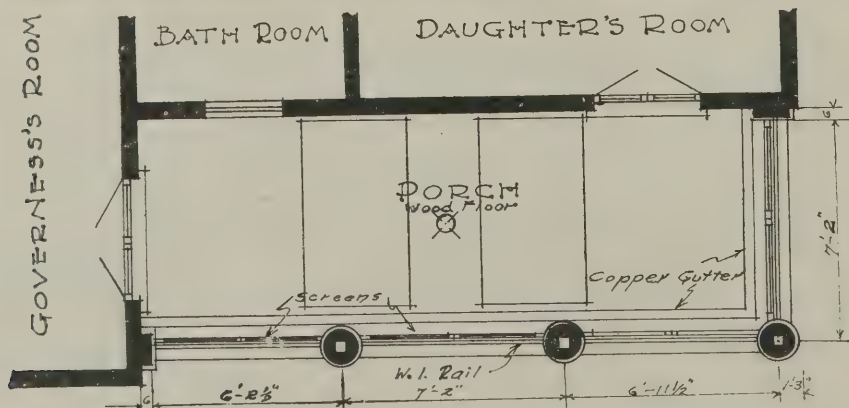
Modern house planning, he thought, tended more to the multiplication of unnecessary conveniences than to the elimination of needless features, both inside and out. Because it was more difficult to eliminate than to do the reverse, and because we saw it practiced so rarely, a doubt was thrown upon the success of such a course. Mr. George Lucas had been bold enough to dare to eliminate, and he left it to the meeting to judge whether fine results might not be obtained by this means.

Mr. H. V. Ashley said he had listened to the paper with interest, but was in total disagreement with the lecturer. He found that the word "elaborate" had a positive and certain meaning. Murray's Dictionary gave the definition of the word as follows:—"to produce or develop by application of labour; to fashion a product of art or industry from the raw material; to work out in detail; to give finish or completeness." He laid stress on this definition because from a certain amount of study of modern houses it became evident to him that house planning was seldom elaborate, and never over-elaborate. He thought that the houses of the seventeenth and eighteenth centuries were probably more elaborately planned than was the case; they were built—the latter houses, at any rate—with fine laid-out dignified suite and reception rooms, noble approaches, and even at the period we find that the architects fought again and again to work out in detail or to elaborate the upper and lower floors, etc. Again, in the work of the early part of the last century we find the reception suites elaborately



HOUSE AT EVANSTON, ILLINOIS, U.S.A.

W. A. OTIS AND EDWIN H. CLARK, ARCHITECTS.



SLEEPING PORCH TO HOUSE AT EVANSTON, ILLINOIS, U.S.A.

W. A. OTIS AND EDWIN H. CLARK, ARCHITECTS.

particularly in town houses; but in the bedrooms, kitchen, and servants' accommodation, we have a hopeless muddle of badly placed rooms which result from failure to work out in detail or elaboration. As to modern house planning, it had been elaborated, but over-elaboration seemed to mean incompetence, and to suggest to architects that the limit had been reached. To plan perfectly a modern house, either large or small, demanded a great deal of application and labour and working out in detail, all of which meant elaboration. How many modern plans of houses could be said to be perfect in, say, only the following points: Lay-out on site and treatment of levels; aspect—sunlight in rooms, etc.; convenient and dignified entrances, halls, and reception rooms; convenient services from kitchen and pantry, and so to dining-room; right position of doors, windows, and fireplaces in rooms; proper and economical planning of sanitary arrangements, baths, lavatory, sinks, etc., and their waste supplies; in obtaining a proper note of distinction over the whole house, and reflecting on clients' wishes and the architect's ability to grapple with them and to elaborate the house; or, as the definition had it, to fashion a product of art from the raw material?

Mr. H. H. Wigglesworth said that the practicability of a plan was of course essential; and if an architect had a sense of beauty he was bound to express it with his practical ideas.

Mr. Geoffrey Lucas, having dwelt on the historical development of house plans, spoke of modern times, when it was required that no rooms should open one to another and that corridors should be provided for each room. Though a plan were elaborate, it might also be simple. The drawings of Phil May were very simple; but he drew and re-drew and eliminated until only the actual essentials remained. It should be the same with the architect. The problem at Gidea Park was partly to do something simple and partly not to do anything picturesque. To do a simple thing with an eye on proportion was exceedingly difficult; and a balanced design, on a small scale, was much more difficult than a picturesque one. When a thing was brought down to a small compass the difficulties became apparent—as an instance, having to make a w.c. window balance with a hall window. In the balanced design, proportion and form were much more important than in the picturesque gabled type of building. If we are to progress in domestic design, said Mr. Lucas, it must be with culture and with a certain amount of cruelty to ourselves, in the way of forsaking certain favourite affectations. It was very difficult to cast them off when one got to like them; but one asked oneself: "What did they lead to?" No one could go to the Guildhall at King's Lynn, for instance, as the ideal guide to the design of a modern town hall for a country town. It was crude and incomplete, though a fine piece of work. The same principle should be observed in the design of a house. Having got the plan, let it make its own elevation. He thought that this idea that a style of domestic architecture could not be produced without harking back to old forms and conditions was out of sympathy with modern society.

Mr. T. L. Dale said that at Gidea Park and similar places architects elaborated it to produce a better house, but a

cheaper house; and the only persons who benefited were the enterprising gentlemen who develop garden suburbs. By making a house cheaper the ground landlords were able to charge more in ground rents.

Mr. A. E. Bullock drew attention to the importance of windows in house design. If sash windows were required, then the design would be Georgian; but if casement windows, then Elizabethan.

Mr. C. G. Boutcher, referring to Phil May, said that in May's case there was elaboration because of the amount of thought put into his work.

Mr. P. M. Fraser said that one of his ideals had been shattered if the remarks about Phil May's method of drawing were correct. He always had understood that May did his drawings in a few seconds.

Mr. W. Curtis Greene said that if we went back to the time when small houses were beautiful things, analysis would reveal their inherent simplicity. A simple instinct of good craftsmanship seemed to pervade them. The old craftsmen did not design their houses—they built them; and they produced what we now say are admirable pieces of building. Coming to the modern practice in domestic design the speaker said that cupboards were largely employed to fill up inconvenient corners; and although ingle-nooks were well enough in old farm-houses with smoke-stained walls and cavernous chimneys, to introduce them without any relevancy, as was so frequently done at the present time, seemed to be a pernicious practice. To the architect who was pleased with some particular piece of design he would say, "Rub it out." This was a good working principle.

Mr. Gerald Horsley said that apart from the difficulty of producing a fine, dignified plan—simple, well-arranged, and suitable for its purpose—there were many smaller difficulties to be considered nowadays. For instance, the necessity for providing a large number of bathrooms. A few years ago one was sufficient for a moderate sized house; then two became necessary; and now it was not uncommon to have to provide several suites of rooms composed of bedroom, dressing-room, and bath-room. This, of course, was not difficult; but the necessity for additional down pipes and ventilating pipes was something of a problem. These pipes never improved the appearance of a house when put up; and he wondered whether any satisfactory

method of disposing of them had been devised.

Mr. Mackenzie, in reply, said it was only by dissatisfaction and constant striving that they could hope to make progress. Turning to Mr. Horsley's question, the speaker said the Americans concealed their pipes, this being practicable in their climate. He thought that, with modern sanitation, it could be done to a certain extent in this country.

Mr. G. H. Jenkins corroborated this statement, and described a method of concealing unsightly pipes by means of a chase in the wall.

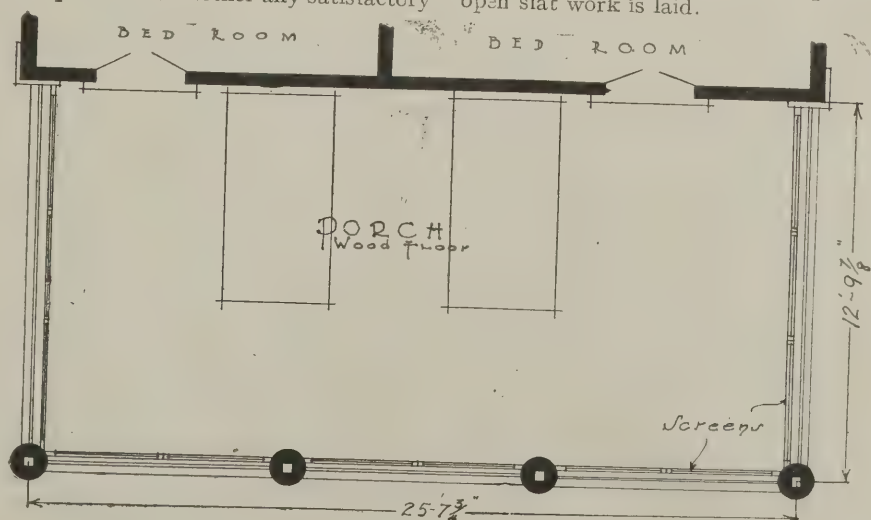
A sleeping porch at the recently completed Evanston residence of Mr. W. S. Mason is illustrated at pp. 173, 174 from drawings and photographs kindly lent by Mr. A. G. R. Mackenzie (of Messrs. Marshall Mackenzie and Son), to whom they were sent by Messrs. William A. Otis and Edwin Clark, architects, of Chicago.

This porch, it will be seen, is directly connected by French windows with the daughter's room, as also with the governess's room, and has space for two beds. The openings between the columns of the porch are filled in summer with copper-wire screens of fine mesh, so as to prevent annoyance from flies or insects. In the winter, curtains, as shown, afford protection in very extreme weather and driving storms. Some owners arrange to substitute glazed sash for some or all of the screens in winter, but apparently it then loses the main object desired—namely, that of permitting the occupant to sleep in the open air.

A plan is also given of a fine sleeping porch in a house at Glencoe, Illinois, recently built from Messrs. Otis and Clark's designs. The same general scheme is adopted here, with such modifications as were rendered necessary by the house plan, the points of compass, etc.

It happens that both these examples are associated with houses designed in what is known as the Colonial style. Such porches, however, are becoming more and more frequent upon almost every type of house in America, whether of stone, brick, wood, or plaster.

These porches, as shown in the illustrations, are most frequently built over a first-storey porch, and the floors consequently have to be water-tight in order to form a roof for that porch, and various expedients are employed with that object. Usually in good work a regular "tin" roof is erected, and upon this open slat work is laid.



SLEEPING PORCH TO HOUSE AT GLENCOE, ILLINOIS, U.S.A.
W. A. OTIS AND EDWIN H. CLARK, ARCHITECTS.

PRECAUTIONS AGAINST FIRE.*

By A. J. STUBBS, M.Inst.C.E.

THE first point of importance that attracts one's notice as soon as the subject of fire prevention comes under consideration is the fact that destruction by fire is such absolute waste, without the least or most remote compensatory influence. In the British Isles alone the annual destruction of property is estimated at something approaching seventy million pounds sterling. The fact that a very large proportion of this is covered by insurance does not reduce the seriousness of the losses—the community is poorer whether the merchant, trader, and small householder, or the rich corporation, should happen to pay the bill. National wealth to that amount has been reduced to ashes.

Loss of Life and Property.

But an even more serious matter is the loss of life that goes hand in hand with this destruction of property. The losses under this head include not only the lives of the unfortunate occupants of the destroyed buildings, but also those of the gallant fellows who go to their rescue or perish in attempts to stop the spread of the fires.

A yet further consideration is that incalculable loss is engendered consequent on the stoppage of business and the resulting loss of work for all classes of citizens.

In a thoughtful and able paper read before the Surveyors' Institute in 1898, Mr. Thos. Blashill, the then Superintending Architect of the London County Council, said: "It is a question whether danger from fire is not increasing in spite of Building Acts. Our buildings are getting more lofty, more closely packed together, and more thickly inhabited. In commercial buildings the rooms are larger and more encumbered with goods in and over which manufacturing processes are carried on. There is more machinery actuated by heat. The timber we use is more easily combustible, fittings are lighter, and everything is kept warmer and drier. All our arrangements for obtaining light, from the lucifer match to gas and mineral oil and electricity, are novel and productive of new dangers. The proportion of window openings to wall space is much increased, and, with the growth of honesty outside, or trustfulness within, shutters have been abandoned. . . . Lifts going through several storeys neutralise the advantage of fire-resisting floors, lighting areas common to different premises do away with the security of the party wall. . . . In fact, the most scrupulously legal building of brick or stone and slate may be no more than a kind of grate in which its internal structure and its contents can be most conveniently burned. So in the Cripple-gate fire the progress was about as rapid as, and the destruction over its limited area no less complete than, in the Great Fire of 1666, and if our arrangements for the extinction of fire had not made immense progress this recent event might have rivalled that great calamity."

Sources of Risk.

Some of the risks due to construction, planning, and uses of buildings may usefully be mentioned, even if they be practically irremediable.

Windows overlooking narrow streets or areas are an ever present source of risk. The destruction last year of a telephone exchange in the North was due to the spread of a fire from an adjacent building on the other side of a narrow lane. No doubt spread of fires from this cause would often be retarded or even prevented if reinforced glass were used, provided that it were fitted in iron frames; and fire-resisting shutters might be depended upon to keep out fire for a considerable time. Of course, in all such matters the *existence* of the device is only the first point; the value lies in its being in order, and being actually used as a regular practice.

There are many post office buildings with wood staircases. Do you know of any where there is a very convenient cupboard beneath? Suspect that cupboard! It is nearly sure to contain combustibles which some evening will be inspected by means of a lighted match—and the means of exit for the night staff above will be a suffocating chamber of smoke or a blazing gap.

Bad construction of flues, stoves, etc., is perhaps not a source of danger in many of our buildings, but it is worth while to realise that there are such possibilities.

Non-existence of a lightning conductor, or position or procedure which jeopardises its continuity, would naturally attract the attention of an electrical engineer.

I think that the use of a heating chamber as a wood store should be deprecated. I have observed such a combination!

Means of Escape.

Again, where the Office of Works provides special facilities for escape in case of emergency, the construction is probably satisfactory, but such facilities must be kept usable. When travelling, I always make a point of knowing what the hotel fire-escape arrangements are, and a few months ago my inspection of the place to which the "fire escape" notice pointed, revealed a small landing packed with chairs, a table, and three or four hip and sponge baths—only just put there, the apologetic representative of the manager told me, because the hotel was so full! Loss of life is probably far greater as a result of panic than from fire itself, and gangways and means of egress must be *always* considered sacrosanct if the safety of life is at stake. This was the great lesson of the terrible Ashe Building fire in New York. There the fact that a "skyscraper" was involved was of little moment; the structural damage was so slight that even the fire itself was not a great factor, but the actual loss of life reached a total of 145, and there was a heavy roll of those seriously injured. Why? Because exit-doors opened inwards; because there was no clear prearranged system of using the very considerable fire-extinguishing facilities, and no instruction of the employees as to their procedure in such an emergency.

The height of the building made a difference for some of the 40 victims who, for want of other exit, jumped from the windows; but it was immaterial to 95 who never got out of the eighth-floor room in which they were working—some overcome by smoke before they got

clear of their branch gangway. Panic and want of gangway killed more than the fire.

Hydrants, etc.

Most of our larger buildings are equipped with hydrants and hose. A point in this connection that is well worthy of attention is to have the hose coupling interchangeable with those of the local fire brigade. I am rather inclined to favour permanent coupling of the hose to the hydrant. An obvious objection to this is that in case of the valve being leaky, the hose may be deteriorated, but this may be obviated by having a small tap kept partly open on the outer side of the valve. Then, if leakage occurs, water will drain from the tap and direct attention to the fault. Generally, there is also a tap on the hydrant from which the water buckets can be replenished.

At the General Post Office.

It may be worth while briefly to describe the rather exceptional hydrant system at the General Post Office, London. Here the north, west, and east buildings are encircled by a 6-in. ring main. Hitherto this main has been fed by steam pumps, but in connection with the development of the power station scheme, these will be replaced by electrically driven pumps, now being installed at the G.P.O. West. The supply of water is obtained from two entirely separate service mains.

The new plant will consist of an electrically driven centrifugal fire service pump, capable of discharging 270 gallons of water per minute against a pressure of 100 lb. per square inch. An electrically controlled hydraulic accumulator will be arranged to start the pump when the pressure falls below 100 lb., and stop it when that pressure is restored.

As a stand-by the two new domestic service pumps will be so arranged that they may be connected in series and arranged to discharge into the 6-in. main by the operation of a single series parallel valve.

In the event of both pumps being imperative, the supply of water stored in the tanks on the roof of the G.P.O. North can be drawn upon by aid of an automatic non-return valve, which will be fitted between the fire main and the main from the domestic service pumps to the tanks.

The hydrants throughout the buildings are served from the ring main.

Automatic Extinguishers.

An interesting resume of the history of automatic sprinklers was given in a paper by Edward V. French, presented before the Congress of Technology, at Massachusetts. He says that the idea originated in England about 1850, and at first consisted of lines of pipes drilled with small holes; the service being by separate mains for each floor, and all the mains being controlled by valves outside the building. I remember those sprinklers and the gibes of the thoughtless that they had to bear. But their possibilities were also early appreciated. Much good work was done in developing the idea, and 1875 saw the first automatic sprinkler.

"The great points of advantage which the automatic sprinklers possess over all other means of fire-fighting are that they are on duty every hour of the day, and every day in the year; the heads which are open are those located just where the fire is; the open heads ca-

*Extracts from a paper read at the Metropolitan Centre of the Institution of Post Office Electrical Engineers, January 8th.

operate regardless of smoke or other conditions which would make it difficult for men to reach the seat of the fire. Such protection can cover every nook and corner of a plant and insure that fire starting at any point will be almost instantly met with such a downpour of water as either to extinguish it entirely, or hold it in check within a small area until the last vestige is extinguished by the fire brigade."

It is evident that the requirements are very exacting. The device, fitted near the ceiling and subject to very considerable variations of temperature and of atmospheric conditions, must so effectually resist corrosion and any other deteriorating influences that it will not be in the least likely to open when there is no fire; but will yet remain so sensitive that after years in readiness unused it will respond to the agreed degree of temperature within a period of from 30 to 50 seconds as readily as it would on the day of its first installation.

The ordinary arrangement of the automatic sprinkler head is to have a half-inch diameter orifice normally closed by a valve held in position by an arrangement of levers or links which are held together by a soft solder, melting at a temperature of, say, 160° Fahr. Such a sprinkler will protect an area of 80 to 100 square feet.

The development of the use of sprinklers has been wonderful. They have proved themselves capable not only of extinguishing fire in protected buildings, but of preventing the entry of fire from adjacent buildings, and Mr. French instances a case of a great fire which destroyed a considerable city block and threatened two adjacent protected factories. In one of these the exposure was so severe that the wooden frames and sashes of the exposed windows were burnt out, and the resulting operation of the sprinklers constituted a prime factor in preventing the total destruction of the building, which was actually comparatively slightly damaged by water.

The only consideration of any moment in connection with an outbreak of fire, if there exist any possibilities of extinguishing it, is *time*. Existence of facilities for dealing with a *small* outbreak of fire, and presence on the spot of means of using those facilities *at once*, would almost abolish need for the wonderful fire-combating system that is such a source of pride and satisfaction to every up-to-date community.

In a very able and interesting paper prepared by Mr. Oatway some years ago he stated that on analysis of the 716 fires dealt with by the Glasgow Fire Brigade in 1902, and estimated to represent a loss of £189,000, ten fires accounted for 73 per cent. of the loss. Thus, given such conditions of prompt attack for those ten fires, as had been possible on the average of the other 706, the total loss would have been reduced by over 70 per cent.

Similarly the London County Council experience is that the proportion of serious fires to the total reported is only 2 or 3 per cent. It will not be overlooked in this connection that hundreds of outbreaks never reported at all, because taken at the earliest stage, contain the same possibilities of disaster as many a great burn-out, save only in this prime consideration of *time*.

At first sight one might be inclined to question whether there is room for both automatic sprinklers and automatic alarms. If you can depend upon

sprinklers to put out the fire, why call the brigade? But a little consideration would show that neither system is so perfect as to exclude the other. One of the most characteristic differences in the conditions of operation of automatic sprinklers as compared with present-day automatic alarms is that the latter are "compensated"—that is, the only systems that count provide for operation of the alarm on a sudden rise of temperature to an agreed amount, whereas sprinklers depend for their operation upon the rise of the temperature to a specified thermometer reading. The importance of this, especially in a climate where the range of temperature is very great, is obvious. For example, the operating point of a sprinkler in a room must obviously be fixed safely above the maximum temperature to which the air at ceiling level can possibly be raised in any normal conditions. The temperature usually adopted is 160° Fahr. It is clear, therefore, that the promptness with which a sprinkler will be brought into operation in the winter will compare very unfavourably with its response in the same room in the height of summer, as in either case the temperature of the whole room must be so raised that the ceiling temperature is 160° Fahr. On the other hand, the compensated alarm device is so arranged that, no matter what the normal temperature may be, a *sudden* rise of, say, 25° Fahr. will operate the alarm. At the same time, it is important that alarm shall be given when a dangerous heat is being generated quite slowly by a smouldering fire. This can readily be provided for.

[The author then described the May-Oatway, the Pearson, and the Aero alarms.]

Minor Appliances for First Aid.

We have now to turn our attention to a few "first-aid" appliances.

(a) *Water Buckets.*—The author held very definitely that these should not be placed in switchrooms, test-rooms, etc., where swamping of wires on slight necessity might have very disastrous results in regard to breakdown of circuits by water. Their sphere is in corridors, offices, linemen's rooms, etc. Wherever it is proper that they be installed it is also proper that they be placed in accessible positions and that they be charged with water. Some time ago, I noticed some fine-looking buckets marked "Fire" hanging over the doors of some rooms—a peculiarly handy position in an emergency!—but the occupants of the room had not observed their existence, and it is probable that they had been strangers to water since they were placed in position. In that building, too, I fancy that taps over lavatory basins present the only source of water supply nearer than the basement.

(b) *Sand Buckets.*—In dealing with fire we need to recognise that force of impact of the extinguishing matter is always a very important factor in its effectiveness. This is particularly the case with sand. Probably a few handfuls correctly thrown will be more effectual than a whole bucketful poured out, because it can rarely happen that the sand will stay where it is wanted. This consideration has no doubt been the reason for the adoption in some cases of large sand buckets provided with scoops or cups; but on the whole I am inclined to think that the engineering department representation on this point is best—the use of small buckets, the weight, including sand, not to exceed

16 lb. Such a bucket gives a fair chance of effective use if it be necessary to work against an inaccessible point, and at the same time is equally convenient for use of the sand by handfuls. It is better to have a group of, say, four small buckets than a smaller number of large ones—especially since under excitement the first shot is likely to be a miss! Mr. Harold Sumner, in a very able paper on protection of factories, recommends that the sand be slightly moist. The idea appeals to me, but I am not clear how it would be practicable to keep the sand in that condition.

(c) *Asbestos Cloths.*—I have never been able to picture any possible effective use in an exchange building for a large asbestos sheet. I can picture one acting as a draught-producer by partial enclosure of a blaze, or conceivably as a fire-screen, but never as a fire-fighter. We issue no specific instructions on the use of asbestos cloths, but personally I think always of a small cloth (say, 3 ft. square, as a maximum) wrapped round one's arm and hand, serving as a device for punching out an incipient fire; or, possibly (where there is no risk of spreading burn-material) the cloth might be useful for beating out a smouldering fire.

(d) *Powder Extinguishers.*—The idea of chemical extinguisher—whether powder or liquid—is the production at the seat of the fire of an anti-combustion gas. The general composition of the various powder extinguishers on the market is, of course, a trade secret; but the following analysis sufficiently closely indicates the character of the materials:—

	Parts
Sodium Bicarbonate (with a little Sodium Carbonate and common Salt)	52
Aluminium and Magnesium Silicate	32
Chalk	8
Water (free and combined)	8
	100

The fire-killing property of those powders is unquestionable, providing that they can be applied to be in efficient contact with the heat.

(e) *Liquid Extinguishers.*—These are really small self-acting fire-engines, having a fixed capacity and a pressure which ranges between 90 and 150 lb. per square inch. They consist essentially of containers (of steel or copper) filled with water and bicarbonate of soda, the extinguishing power of which is many times (say 10 to 12 times) greater than that of water. The device is brought into operation by the automatic liberation of acid into the solution. The resulting gas gives the necessary pressure to expel the solution. The great advantages of these chemical fire engines, from the engineering department standpoint, are that (i) as compared with hand fire engines they can be worked single-handed; (ii) the efficiency of the liquid may enable the extinction of a fire to be effected with much less damage to electrical plant; (iii) in addition, as compared with the more ordinary "first-aid" devices (water buckets or sand buckets), it is dirigible, so that every pint tells; and (iv) the liquid is applied under considerable pressure.

(f) *Hand Fire Engines.*—No doubt hand fire engines have a sphere of usefulness, but I must admit that they do not appear to me to be a very valuable first-aid appliances for ordinary conditions in post-offices. I fancy that

most men not specially instructed (which is the case with most men) would like to have a minute or two with the engine before starting to use it against a real fire. It seems quite likely also that if a man, after discovering a fire, has to go to seek another to help him work the engine, and together they find out *how*, by that time one of them had better go and call the brigade while his mate watches the engine and the fire!

FIRE PREVENTION NOTES.

First-aid Fire Prevention. The human tendency to neglect what is obvious applies rather markedly to fire protection. This fact was the text for much practical comment by Mr A. J. Stubbs, M.Inst.C.E., in his lecture on "Precautions Against Fire," read at the Metropolitan centre of the Institution of Post Office Electrical Engineers. He points out that it is necessary to say; after spending time and thought in the production of a fire-fighting system, "keep it in order." It is foolish, as he says, to make elaborate preparations for fire, and then to have them all nullified by an empty bucket, or a wrong hose coupling, or a missing coupling key. Even more heart-breaking was an experience, some few years ago, at a great public school. The school was well equipped with first-aid appliances, and boys and men-servants were thoroughly well drilled in their use. A fire broke out, the amateur fire brigade was rapidly assembled, each person taking his appointed position and performing his allotted task with splendid celerity. Everything went without a hitch until the moment came for turning on the water. It was then found that in order to do this it was necessary to send a considerable distance to the dwelling of the turncock. He had to be dragged out of his bed; and by the time he arrived on the scene the public fire brigade was doing its best to suppress what had become a very serious fire. The dependence on the public turncock is inexplicable, and was disastrous.

Inspection Essential. Of course, as Mr. Stubbs said, and as we have so often pointed out, regular and systematic inspection is absolutely essential. "A weekly inspection is not too much, and a monthly inspection is, in my opinion, the outside limit. The inspecting officer should take an exacting view of his responsibility, and should recognise that weak points in the system itself come within his province for report. Besides seeing that the appliances generally are in order—buckets charged, asbestos sheets in position and easily removable, hose-coupling keys correct, taps and cocks turnable, etc., etc.—he should report any doubtful or irregular conditions; as, for example: (1) inflammable materials placed in dangerous or risky positions; (2) existence of unprotected gas-burners that should be fitted with wire globes; (3) blocking corridors, or other escape facilities, by cupboards, etc.; (4) employment of temporary stoves, or temporary placing of carpenters' bench near a stove; (5) removal or non-existence of desirable notices."

Testing the Appliances. It is easy to agree with Mr. Stubbs that this frequent inspection should be supplemented by regular periodical tests of

personnel and of appliances, and that the tests should be thorough. "Anything that can only be made 'to work near enough' under test will infallibly *not* work in emergency. It may be a very simple matter when testing, 'to get the hydrant key from the next floor,' but on the one occasion when it is really wanted this may be impossible. Every item should be *known* to be right, every operation that would be needed in case of fire should be actually and easily done." There is much practical wisdom also in the advice that the inspection and tests should not always be made by the same man, whose familiarity with the conditions may dull his sense of their defects. The element of competition will make for keenness; the inspector being all the more alert for the knowledge that he is himself, in a manner, under inspection. In this way perfunctoriness will give place to punctiliousness: both of which are evils, perhaps, but the latter being infinitely preferable in a matter in which, while fussy fastidiousness may be merely annoying, laxity may entail consequences that are absolutely disastrous.

Fire Brigade Competitions.

That keenness is engendered by competition we have noted some striking examples. Large private firms appear to be aware of its important influence on "smartness" in their brigades. Different departments are pitted against each other, and prizes are awarded to those that show most efficiency, whether as individuals or as brigades; and there can be no question of the value of this form of stimulus in getting the men to extend themselves. A short time ago we happened to be present at a London railway terminus on a Sunday afternoon, when there was but little traffic running, and when the station yard was clear and most of the men were off duty. A contingent had been got together for fire drill; and the officers in charge informed us that, in view of a forthcoming competition, the men not only cheerfully gave up their Sunday afternoon rest, but, as the result of frequent practice, coupled with the desire to distinguish themselves in the contest of brigades, they had shown an almost incredible improvement in speed and efficiency. The officer was timing their operations with a stopwatch, and recording their progress.

Dry Drill and Wet Drill.

This was, it need hardly be said, a "dry" practice, as is, necessarily, most of the drill of private brigades. There is a natural desire to avoid the inconvenience and possible damage that are inseparable from the actual use of water in practice. We know of one or two large firms, however, who occasionally allow their brigades to play upon the premises, and to behave exactly as if a fire had broken out; the point of origin being assumed and indicated, and operations directed accordingly, the men using ladders, climbing over roofs, and negotiating difficult approaches just as they would in the case of a fire. These realistic practices occur either before the premises are opened for business, or after they are closed; and to compare them with the ordinary "dry" drill is to emphasise an enormous disparity. The wet drill, as a business manager informed the writer, is "well worth the mess and fuss," while the damage done by the water is quite insignificant, and is more than counterbalanced by the cleansing that occurs.

STORAGE OF PETROLEUM SPIRIT

A useful indication of approved precautions against combustion where petroleum spirit is stored is afforded in the following recommendation by a Committee of the London County Council:

That a licence be granted to the Anglo-American Oil Co., Ltd., for a period of 12 months, as from the date of the completion of arrangements satisfactory to the Council, to keep 100,000 gallons of petroleum spirit at the company's premises, Tea Rose Wharf, Rainville Road, Fulham, subject to the surrender of the firm's current licence for the storage of 43,000 gallons of petroleum spirit, to the following conditions, and any other special conditions applicable to the case and necessary to secure safety, and to the usual conditions attached to licences of this character granted by the Council—

(i.) That the spirit be stored in seven tanks, each of 12,000 gallons capacity, in the positions shown on the plans, and in strong, securely closed metal vessels—namely, steel barrels, 5-gallon drums and 2-gallon cans in the filling-house and store-room, provided that the quantity to be stored in such vessels does not exceed 16,000 gallons.

(ii.) That the five new tanks and all piping connected therewith be constructed of the best material; that these tanks be sunk underground in a substantially constructed brick and concrete chamber as shown on the plans, such chamber to be not larger than is necessary for the reception of the tanks, allowing a space between each of not less than 12 in.; and that all spaces in the chamber not occupied by the tanks be filled with sand.

(iii.) That all manhole covers and points at which pipes pass through to the tanks be above any flood level; that the portion of the premises where any such manhole covers and pipe connections are situated be surrounded by a dwarf wall 2 ft. high and 9 in. thick, and that the spirit pump and pipe connections for the tank barges be fixed inside this enclosure.

(iv.) That the surface drainage of the wharf be passed through a petroleum interceptor approved by the Council.

(v.) That the filling of the cans, drums, and barrels be carried on in the fire-resisting building marked filling-house.

(vi.) That the filling of the cans, etc., be done by pumping the spirit from the storage tanks into three overhead service tanks, each of 400 gallons capacity, fixed in the filling house, and fitted with overflow and emptying pipes returning to the storage tanks, the spirit to flow from such service tanks through iron piping to suitable filling apparatus so designed as to secure the minimum exposure of the spirit.

(vii.) That the filled vessels be stored in a fire-resisting store erected in the position marked on the plans.

(viii.) That the road tank waggons be filled by pumping the spirit from the storage tanks to two filling standards to be erected in the covered enclosure marked on the plans, the surface of such enclosure to be suitably paved and sunk so as to retain any spilled spirit.

(ix.) That, for the purpose of spraying the interior of cans, the spirit be run from a separate service tank of 100 gallons capacity, fitted in an approved

position in an approved manner, through iron piping, to an approved can-spraying trough fixed in the filling-house.

(x.) That due provision be made to the satisfaction of the Council to prevent outflow from any portion of the premises where petroleum (whether spirit or oil) is stored or handled.

(xi.) That the storage of oil on the wharf be confined to the oil enclosure marked on the plans, and that no additional oil tanks be installed without the consent of the Council in writing.

(xii.) That only fire-resisting materials be used in constructing the tank waggon filling enclosure and the proposed lean-to on the south wall of the filling-house, and in adapting or fitting up the existing oil filling-house for spirit-filling purposes, that all existing woodwork be removed, and that the floor of such filling-house be sunk to a sufficient depth to retain all spirit in filling-house, but not sunk lower than 8 in. below the lowest openings in the walls, and that there be no openings in the north and west walls of the filling-house except ventilating openings, covered with fine wire gauze, in approved positions.

(xiii.) That a brick wall 10 ft. high and with no openings therein be erected at the rear of the tank waggon filling enclosure as shown on the plans.

(xiv.) That the premises be artificially lighted by incandescent electric lamps with double globes, that all electric wiring be carried in metal conduits, and that all electric switches be placed in approved positions.



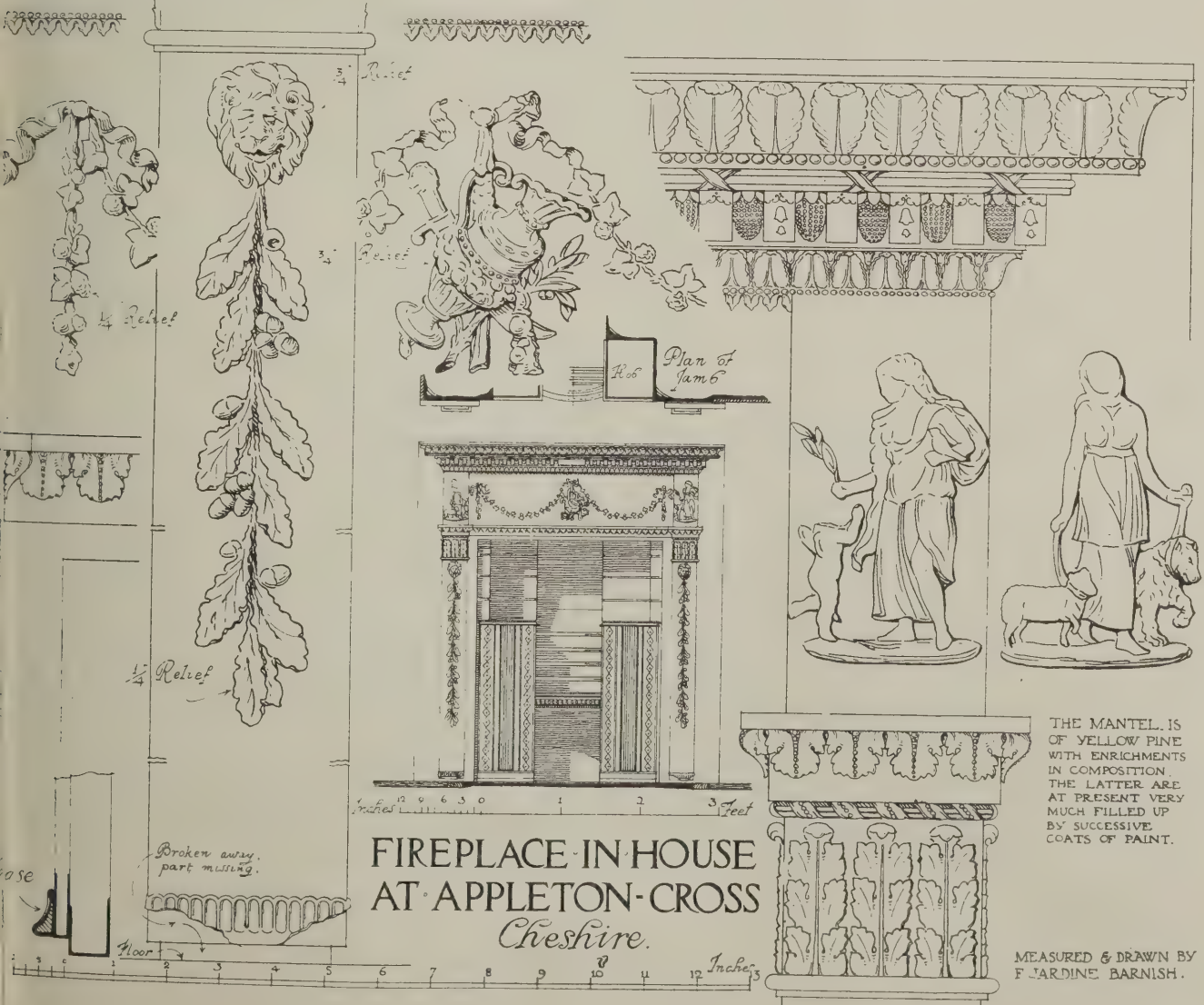
DETAIL OF FIREPLACE AT APPLETON CROSS.

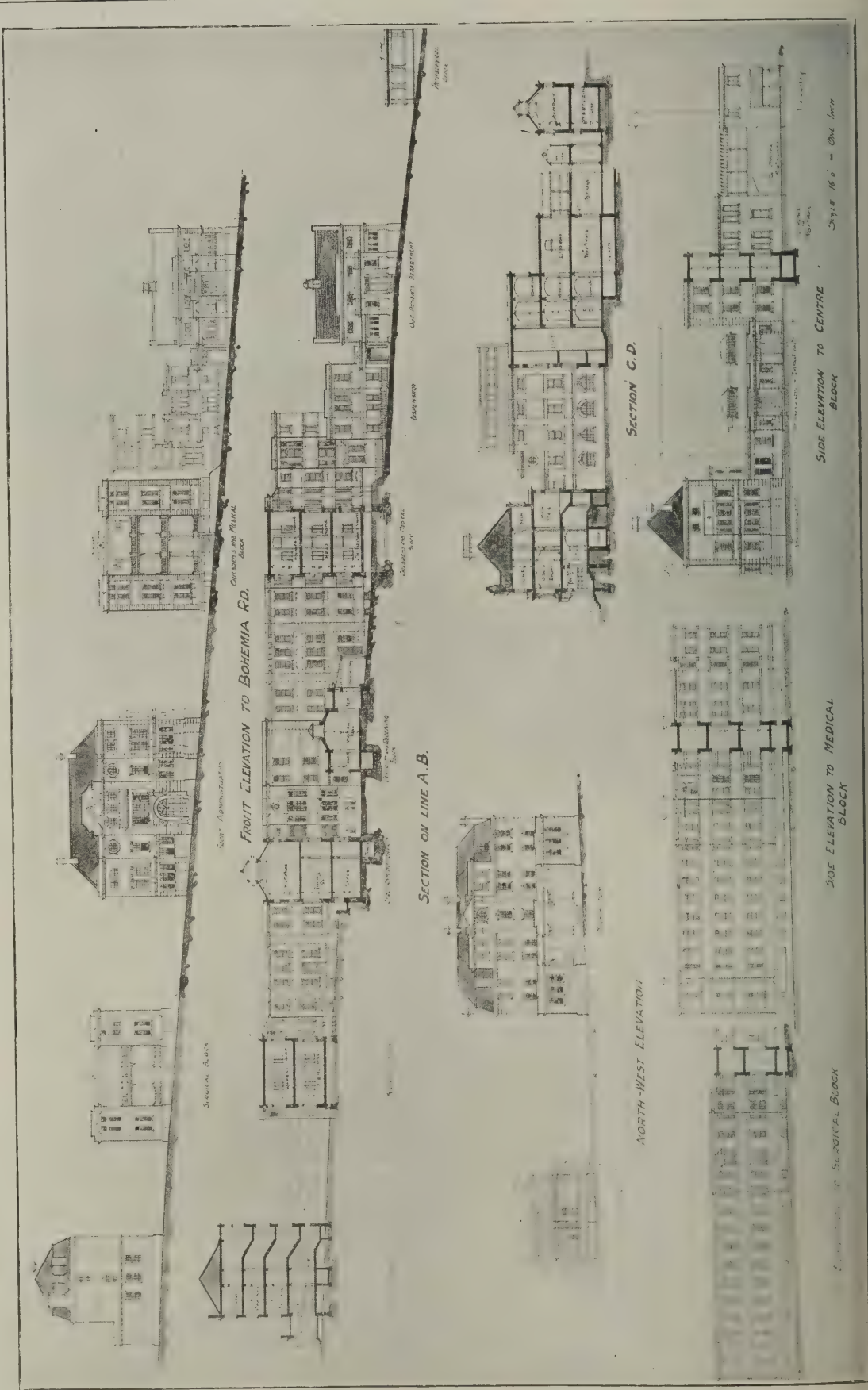
(xv.) That fire, flame, or such artificial light as will ignite inflammable vapour be not allowed within 50 ft. of the places where petroleum spirit is kept or handled.

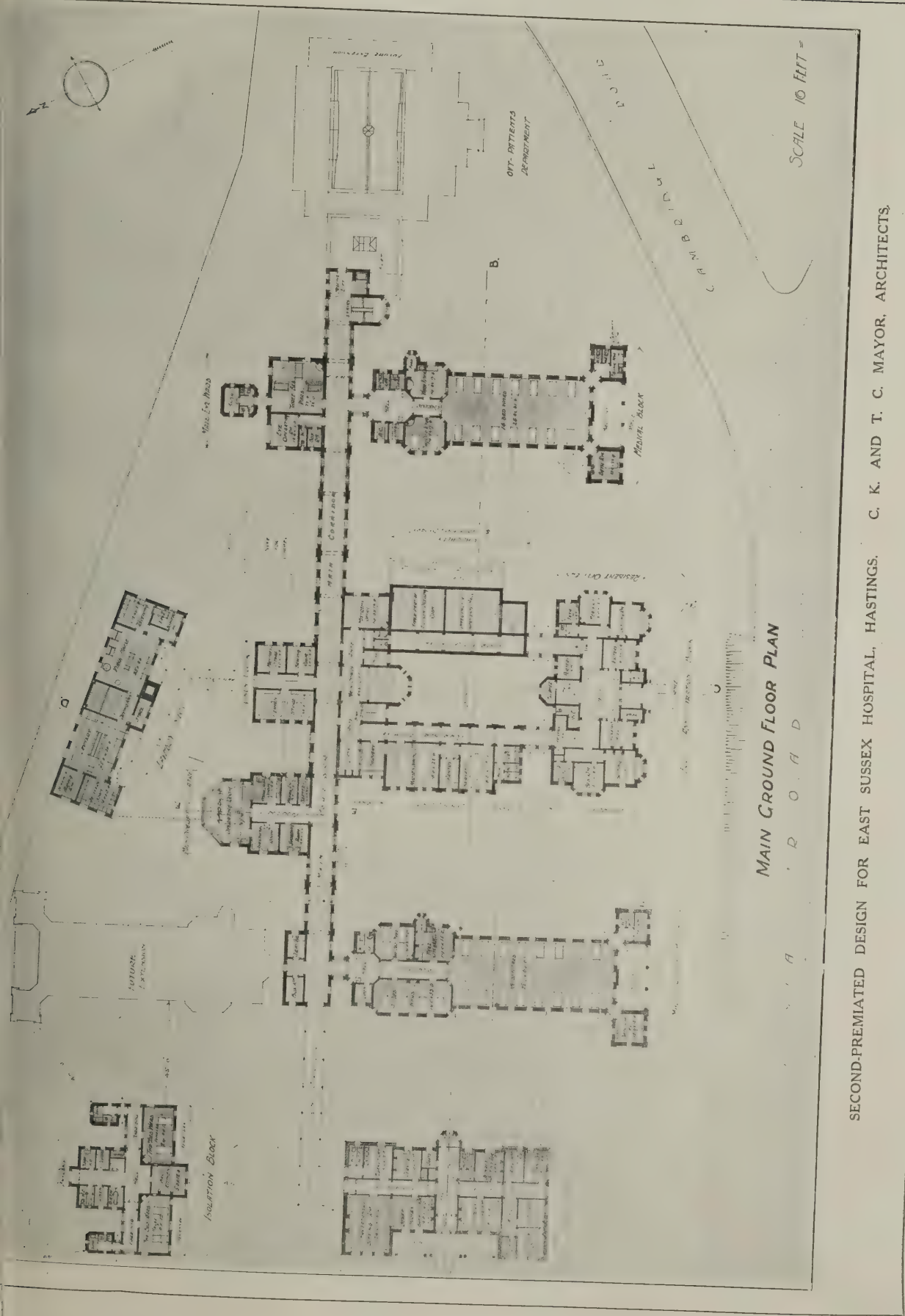
(xvi.) That the petroleum spirit conveyed from the premises be subject to conditions as to conveyance approved by the Council.

AN ADAM PERIOD FIREPLACE.

The fireplace shown on this page by a detail photograph and a measured drawing by Mr. F. J. Barnish has been discovered recently in a house at Appleton Cross, about four miles from Warrington. It is, apparently, of the Adam period, though the date cannot be definitely attributed.







SOME REMINISCENCES BY MR. LEONARD STOKES.*

A year ago, I made a promise which I am breaking to-night. I remember it if you do not, so I am not going to plead forgetfulness, but only that I have been advised that my promise was an unwise one, which had better not have been made, and so had better not be kept.

As I have failed therefore to produce for you an address to students, from a student, I will try to take myself back rather more than a quarter of a century to my own student days, and tell you, if I may, a few of my own experiences and mistakes; for though at the time I was not of an age when mistakes are generally made, or, at any rate, admitted, yet now I can see very well that I was not quite so infallible as I thought myself to be at the time. Take warning, therefore, and remember that it has been very truly said that even the youngest of us may make a mistake!

Well, my first one was that I began my architectural life much too young, and without proper preparation; but as my health broke down time after time at school, and as I had a taste for building rabbit-hutches and drawing tracery-windows with a pair of compasses, a kind friend suggested that an architect's office was a nice easy place to be in—he was by way of being an architect himself, and should have known better—and that as no examinations were necessary, I could easily become an architect!

So without more ado I was articled for three years. There may have been some excuse in my case, but from personal experience I can say that no young architect should begin his career without a thoroughly good all-round education. Whether, from an architectural point of view, he should go to one of the universities or not I am not prepared to say; but from a worldly aspect I feel sure he would be wise to do so.

But to return to my mistakes. The first thing my master, who was quite a good architect in his way, asked me was, whether I preferred Gothic or Classic architecture. Well, I thought of my rabbit-hutches, and my tracery-windows, and answered "Gothic!" The result was not what I expected, for I was set to cut my teeth on "the Orders," and as I could not use my instruments at all properly, you may imagine what I made of them. Of course I should have been taught to draw, and a good many other things besides, before I ever tackled "the Orders" at all—as is now so well done in architectural schools—but as a matter of fact, after the first few months I never looked at them again—at least not for many a long year.

My master was an old Architectural Association man and a great believer in that body, so I was told I must join and look forward to holding some office in it as he had done. That was my first ambition. Well, the "Brown Book" was studied, and, as the subjects in the Advanced Class of Design seemed easier than those in the Elementary Class, plunged into the Advanced Class without more ado, which, of course, was a great mistake, for whereas my first design was for a cricket pavilion—which taught me next to nothing—I might have been put through my facings on "an Atrium to a Roman House" in the Elementary Class,

for which I should have had to look up some authorities, and go into the subject properly and refer to my old friends "the Orders." But not having had any proper schooling, I must needs try a short cut to architectural fame!

This, of course, was the greatest of all mistakes, for the older I get the more certain I am that a good grounding in things architectural is absolutely necessary; so, if you will be advised by me, you won't try any short cuts whatever, but go steadily on up the ladder, round by round, from the bottom to the top; and if, on looking back, you remember having on occasions taken two or three rounds at one time, go back at once, however near the top you may be, and go over them again, one at a time, before it is too late, for we cannot be too thorough in our studies if we want to be authorities in after life.

And if we want to be thorough we must cultivate our observation on all occasions. In my nursery days I well remember a little story we were very fond of, called "Eyes and No Eyes." There was a good little boy—"Eyes"—who noticed everything, and his walks were full of interest, for he saw the cows milked, heard the birds sing, and smelt the flowers, whereas "No Eyes" came home having been impressed only by the hardness of the road and the length of his walk!

Now life is full of "Eyes" and "No Eyes"—principally "No Eyes"—and the "Eyes" get on and "No Eyes" do the reverse, particularly amongst architects, for what are we without observation? Is not our one way of learning how to produce desired effects to find out how others have done what we want to do, and to make quite sure how they did it? Do we not measure every inch of the admired object so that we may have it on paper, and by comparing the drawing with the original make ourselves able to judge work the other way round—that is, by beginning with our paper work, knowing in our mind's eye what it will look like when produced in bricks and mortar? "Eyes" can do this; "No Eyes" can't.

Of course a sense of proportion is a very valuable gift. Whether it can be taught or not I should not like to say; but observation will help us a great deal, and not only observation of the object itself, but also of its position, material, and surroundings, for it is obvious that a slender column which might look right in a screen would look quite wrong carrying a large building, so that we must use judgment with such rules as we have, and to get judgment I contend we must train our own eyes and not depend on other people's.

My three years of pupilage being over, I went by advice into a quantity surveyor's office for a year; and perhaps the only thing I ever learnt thoroughly in my life was how to "square dimensions"! for I spent "six months' hard" at it. I also learnt how to tick abstracts and a few other accomplishments which have been of no use to me since, except that I now have a general idea of what there should be in a bill of quantities—only too often to find that it is not there!

While in the surveyor's office I had a month's holiday, which I used largely in measuring up a fine old church, the drawings of which got me into the Architectural School at the Royal Academy as a probationer, but of course when I got into the schools I found that I knew much more than my masters,—a fatal thing, but I was still very young!

The teaching in those days, however, was a very perfunctory performance. Each student got—if he was lucky—a few minutes' criticism once a week from the visitor! While, in my case, what I wanted was solid hours of instruction! But I suppose it was my own fault for going to the wrong shop?

While in the schools, I made several vain attempts to win a big prize. The first time I think I might have had a chance, but for a much better and more elaborate design. This elaborate design not only lost me that prize but perhaps the next one also. For the second time I thought that elaboration evidently fetched the R.A.'s, so I would be elaborate, and I was! But Leighton, in giving out the prizes, said there was a want of "expressional fitness" about some of the designs—and there no doubt was! Elaboration had failed, so next time "expressional fitness" was my one idea! But this did not come off either! The mistake I made after my first attempt, was not going quietly on doing the best I could without any regard to my judges, or, at any rate, to my idea of them.

Take warning, therefore, and never—whatever you do—either play up—or down!—to your judges, even if they are the Council of the R.I.B.A. Do justice to yourself and yourself only, and never bother about anyone else—until you get a client; and then, unless you have luck, you may perhaps even wish you hadn't got him.

After I had finished my year's quantity surveying—that is, about the time I got into the Academy Schools—I went for nearly a year as clerk of the works on a big building, and saw a certain amount of life and its wicked ways in the building line; and then about another year or so at office work, during which time I won my only prize—the Pugin—more by good luck than anything else, for there were two other men better than I was, but they were so equal that the judges could not make up their minds which was the better, so they gave it to me!—much to my surprise, for although I had sent in some good honest work I knew that either of the two other men was more likely to get it than I was, but I wanted to get my hand in, for perhaps the following year.

Another mistake I made was to avoid the examinations established by this Institute by joining as an Associate amongst the last batch who were elected without examination, instead of even then taking to my books and fitting myself in the only right way—for a youngster—to become a member of this Institute.

I have now described to you my student days proper, and will let you off the old platitudes about being a student all my life. The only thing that I have omitted to mention is that for about three months in each of four years I travelled; twice in England and twice on the Continent, my only regret being that the bulk of my work was not more serious and not quite so sketchy; but in common with other students my eye was caught by bits of pretty detail, and, instead of worrying out the general scheme and construction of a fine piece of work, some dodgy little corner which made a pretty sketch was too often selected.

Now the lesson I want you to learn from all this is that I was too young, and not half equipped for anything, at the time I attempted it, and that I drifted into practice long before I should

* Delivered by the President, Mr. Leonard Stokes, at the general meeting of the Royal Institute, February 5th.

ave done, and here I am in the Chair
olding forth to you some ten or fifteen
ears too soon; not that ten or fifteen
ears can make any difference to me
ow, but properly spent at the beginning
f my career they would have enabled me
to address you this evening with much
reater advantage and profit to yourselves
s students.

CRITICISM OF DRAWINGS SUBMITTED FOR THE INSTITUTE PRIZES AND STUDENTSHIPS, 1911-12.*

BY GERALD HORSLEY, F.R.I.B.A.

The Essays.

In the course of his observations, of
which only a modicum can be here repro-
duced, Mr. Horsley said that time had not
permitted him to read the essays which were
submitted; but he was indebted to Mr.
Reginald Blomfield, who took part this
year in judging them, for some valuable
marks concerning them. These re-
marks Mr. Horsley read, as he was sure
they would influence our younger writers
on architectural subjects to cultivate a
clear, simple, and direct style of writing.
Mr. Blomfield was quoted as saying:
"The essays sent in for the Institute
Silver Medal were unequal. Some of them
were irrelevant to the subject, but that
part in by 'Redundancy,' to which the
prize is awarded, is an exhaustive and
thoughtful essay on a difficult subject,
and has well earned the prize. Certain
serious literary faults appear in the
majority of these essays, such as a tendency
to rhetoric which fails of its pur-
pose; a habit of powdering the essay
with quotations from every possible
writer, poets, essayists, and others, many
of them having little or no bearing on the
points under consideration, flippancy and
familiarity in style, occasional lapses
in grammar, and, lastly, a mistaken
conception of what either an essay or a
book should be. Many of these essays
are mere strings of classification; the
subject is divided and subdivided till it
is lost out like a river lost among the sands.
A central idea emerges as a result of all
this industry, and the writer appears to
forget that an essay or a book should be an
organic composition, with a beginning,
middle, and end, and a backbone of some
unite idea running through the whole.
The object of these essays is not a display
of literary fireworks, but the clear and
logical presentation of the ideas and
conclusions that result from the careful
study of facts. The art of the writer
should not obtrude itself; it is shown in
the orderly marshalling of his forces, in the
clarity and precision of his statement,
and in a certain suppressed emotion that
expresses the deeper harmonies of his music.
The method of writing which shocks and
annoys is wrong. It is with writers as with
artists; the best are those who make
no parade of their technique." Mr.
Horsley recommended this excellent
criticism to the consideration of all
architectural students.

The Soane Medallion.

Turning to the drawings, the author
commented upon a certain weakness in
the design section, and a certain strength
in the studies in ancient architecture.
The fact that this year the Soane Medal-
lion has not been awarded supports this
view. The strength in the design section
was in the excellent work submitted by
the winner of the Tite Prize. The way
in which he has solved the problem
presented for solution, and the quality of

his drawings, should be particularly
noticed. He has best fulfilled the pur-
pose of this competition, which is to pro-
duce a fine design finely drawn. The
Soane Medallion is not awarded this year
for the reason that no one of the designs
shows a real grasp of the conditions
governing the competition, nor an entirely
satisfactory solution of the problem.
The Council decided, in consequence, to
bracket together the two designs under
the mottoes "Circle City" and "Ante"
in Honourable Mention, and to divide
the prize of £100 between the authors of
them. The two successful designs repre-
sent two different views of the problem,
and neither has wholly succeeded.

"Vista," in Mr. Horsley's opinion,
well deserves the certificate of honourable
mention which he has won. "In my
opinion his plan is the best in the com-
petition." Had his elevations and sec-
tions displayed greater powers in design,
this set would have surely earned for its
author a more prominent position. The
chief excellence of the design lies in the
plans; the grouping of the reception-
rooms at the head of the principal stair-
case, between the banqueting-hall and
small hall, on the first floor, is particularly
happy. Again, the Guildhall itself is
admirably placed and excellently designed
for its purpose. The author has evi-
dently paid special attention to the many
details in accommodation necessary for a
building of this important character.
He is especially successful in providing
ample platform accommodation both in the
large and small halls. This important
matter has been generally rather over-
looked in the other plans in the room,
the grand organ and orchestra having
frequently been obliged to be content
with very inadequate space and accom-
modation. It is unfortunate that the
drawings in this set are rather too black
and too coarsely executed. Probably
the author desired to make his work
"tell," and used this method accordingly.
Mr. Horsley considered that view to be
a mistaken one. Drawings which are
delicately and beautifully drawn are
more attractive and more helpful in
portraying a design.

The Tite Prize.

After briefly criticising the work of
the remaining candidates for the Soane
Medallion, Mr. Horsley turned to the
drawings submitted for the Tite Prize.
Referring to the excellent work provided
by the winner, Mr. Louis de Soissons,
he said that the plan is admirable for
the purpose—namely, the central court-
yard of a Royal Exchange. It is thor-
oughly well thought out, stately, with
ample and dignified entrances. The
courtyard itself is as large as possible, a
first consideration in a Royal Exchange.
The proportions of the building are
exceedingly good, especially in the well-
designed "order" of the interior. The
drawings are beautifully executed, and
gain technically by the careful showing of
the jointing. Their good effect is rather
marred by some signs of hurry in the
detail drawings. The design marked
"The Circle" well deserves its certificate
of honourable mention. It is a well-
drawn set, though rather overtinted in
too sombre and dark a grey; but the
plan is beautifully drawn, and so also is
the sheet of $\frac{1}{4}$ -full-size details. The whole
design is a thoroughly interesting study,
and by its close following of Italian
detail keeps strictly within the expressed
intention of the competition.

On leaving the consideration of these
drawings for the Soane Medallion and the

Tite Prize, Mr. Horsley, after detailed
criticism of the work of the several
candidates, congratulated the Royal In-
stitute upon its recent decision to make a
competition in design one of the com-
pulsory features in its final examination.
This competition, he said, will oblige the
student in the future to study design
systematically. Every architect who
has seen the good work done by young
students in French ateliers in the *petits
concours*, or sketch design competitions so
frequently held there, will surely hope such
trials of strength may be more frequent
among our own students. Even in the
case of the youngest it is no bad thing
to encourage him sometimes to "hitch
his wagon to a star," or "dip his pencil
in the hues of the rainbow."

The Grissell Gold Medal.

In the competition for the Grissell
Gold Medal four competitors have entered.
To "MCMXII." the prize has been
awarded. Undoubtedly this design best
fulfils the requirements of this com-
petition. The construction is extremely
well adapted to a temporary building,
and the plan is quite good, though,
personally, Mr. Horsley would prefer a
more dignified architectural treatment for
the housing of an art exhibition. "Fer-
dans blanc-mange," by his choice of
material—namely, reinforced concrete—
has put himself out of court, as it can
hardly be called one which is suitable for
a temporary building.

The Measured Drawings.

The Measured Drawings Prize and
Silver Medal competition was a very
good one. Five sets of drawings were
submitted, and after a careful study of
them and a scrutiny of the measured
work and sketches done on the spot, one
feels that Mr. Maxwell has well earned
the prize. His portfolio of measured
studies is an admirable example of what
such a collection should be. Taken
together with his finished drawings, it
shows that his study of this beautiful
old house, Compton Wynates, has been
thorough and exhaustive. In making
his survey sympathetic and complete he
has realised more than any of the other
competitors the special purpose of this
prize—namely, to encourage a compre-
hensive and highly intelligent study of
an ancient building of importance. The
result is that he has produced a set of
drawings in a manner worthy of the
interesting example of English archi-
tecture he chose to study. Mr. Horsley
thought, however, that attention should
be drawn to the fact that the finished
drawings consist of mounted tracings from
drawings made on the spot.* Mr. Horsley
thought that such a practice was to be
strongly deprecated, for the reason that
tracing-paper, however well mounted, is a
fragile material of little natural per-
manence. Measured drawings of this
importance may pass into our national
collections, such as that at South Ken-
sington, and should be on sound English
drawing paper. The two competitors
who received honourable mention both
submitted sets of drawings of great merit.
The technical excellence of their work is
very good. "Arno" has particularly
distinguished himself in his detail-drawing
and in a perspective sketch. It would
have been possible to commend these two
sets more highly had the original surveys
made on the spot in both cases shown
better evidence of a closer investigation
of the essential qualities of the buildings.

*It has been explained that the paper used is
"tough English bank."

The Pugin Studentship.

The drawings submitted for this prize show a very high degree of merit. Mr. James Macgregor has won the first place by the excellent quality of his workmanship and full set of drawings. His perspective diagram of the interior of Sherborne Abbey is to be especially commended. Mr. Norman Mackellar shows an excellent study of Durham Cathedral; a model study for a Pugin Student, and a proper subject for competition for the Measured Drawings Prize. Mr. W. J. P. Jones submits some excellent drawings, particularly of Stokesay Castle and some foreign subjects. In the choice of the latter he has strayed from the strict conditions of the competition. Mr. Anderson and Mr. Leathart have also been honourably mentioned; the former has good work from Lincoln and Southwell, and the latter very good representations of carved and coloured woodwork.

The Owen Jones Studentship.

It is regrettable that a studentship of this importance and value should have attracted but two candidates. The competitors have spent too much time upon very elaborately worked figure painting and facsimile representation, although in doing this they show quite remarkable excellence. It should be remembered that the object of the competition is to test the competitor's acquaintance with the disposition of colour in such a way as to enhance architectural effect, and to beautify the building by colour and such ornament as may assist in this result. Correct drawing of the figure is important, but not so much the painter's skill in execution. The drawings of both competitors show much ability.

The Arthur Cates Prize.

Mr. J. B. F. Cowper has deservedly succeeded in winning this excellent prize with a fine collection of sketches and measured drawings, chiefly of mediæval work. The competition generally is weak in its representation of studies in classical and Renaissance architecture. One may hope that in the future the competitors for this prize will pay more attention to these periods.

[The official list of awards was given in our issue of January 31st, p. 123.]

DISCUSSION.

Sir Henry Miers, of London University, proposing a vote of thanks, said that the president had shown himself to be an artist in words as well as in stone. At London University, he continued, they hoped to establish a strong school of architecture, and in this work they would greatly value the advice of the Institute. He included Mr. Horsley in the vote of thanks for his sympathetic, searching, and excellent criticism of the drawings on the walls. They hoped to have a new building for the University, and he trusted that the Institute would provide an architect who would design a building worthy of its purpose.

Sir Alfred Keogh, Rector of the Imperial College of Science and Technology, said that, as the head of a great institution, it was natural that Sir Henry Miers should refer to the effort now being made to found a great school of architecture in London. He, too, would like to say something on the subject of education. Although, to a slighter extent, his college had some intimacy with architecture—on a subject which had been somewhat neglected in the past. The desirability of a better acquaintance with scientific work had long been recognised by that Institute; and efforts were now being made at the Imperial College to meet the

need. He hoped they would thus take some part in providing for the efficiency of the architectural profession.

**BUILDING INTERESTS IN
SOUTH AFRICA.**

*Specially written by our South Africa
Correspondent.*

JOHANNESBURG, January 15th, 1912.
The Building Boom.

I am able to give your readers some very interesting figures supplied by the Municipal Surveyor's office of Johannesburg regarding the extraordinary activity there has been in the building trade here. Throughout last year 3,665 plans were approved, these affecting 8,028 separate buildings and tenements, against a total of 6,652 for 1910. It is estimated that accommodation is provided for 12,608 Europeans and 4,312 natives, whilst the cost of construction is put down at £1,810,754.

The total for last year exceeds that for the previous year by no less a sum than £464,994. It will be seen that in a period of two years over £3,000,000 has been put in bricks and mortar and wood and iron in Johannesburg. Since June, 1907, plans have been approved for 25,599 separate buildings and tenements, the total cost of construction being £4,382,534.

New Pretoria.

Nowhere has there been such a transformation as in Pretoria. The Union Government buildings are rising up as one of the grandest piles in South Africa. The capital will also soon possess the finest railway station in the Union. It is situated at the top of Market Street, to the east of the existing railway terminus, and its completion is involving the construction of a new roadway by the Municipality, and an extension of the car lines to the entrance to the station itself. Mr. Herbert Baker is the architect of the structure, and Messrs. Prentice and Makie are the contractors, both firms also being associated with the Union buildings. The station has a frontage of 208 ft., and covers an area of 28,000 sq. ft. It is built of local granite. I have already described the other great improvements which are taking place in Pretoria, which are really transforming the place into a veritable city of palaces.

The Coloured Artisan.

This is a subject that I have touched upon several times. A friend writes in a way that puts the matter very clearly. He says: "The inroad of the coloured man into the field of unskilled labour has of late been the cause of considerable anxiety to the white population. With his advent the scale of wages must inevitably fall, and unless some remedy is found to check the black invasion, a state of matters similar to that prevailing in Cape Colony will soon be found throughout the Transvaal. No one who desires a white South Africa can view the prospect without deep concern."

The Art Gallery.

The foundation stone of the new Art Gallery for Johannesburg, as designed by Mr. E. L. Lutyens, F.R.I.B.A., was laid a few months ago, and a start is now being made. It will be a magnificent building situated in Joubert Park. The cleverness of the design rests in the adaptation of the style to South African climatic conditions, and this is impressed by the ingeniously devised top lighting of the picture galleries. The plans in themselves are an inspiration, and their realisation will produce a building which

will be decidedly worthy of its purpose. Mr. Robert Howden, President of the local Architects' Association, and Mr. Herbert Baker, the distinguished architect who designed the Union Buildings, will, it is understood, superintend the work.

A Johannesburg Retrospect.

The following building retrospect for 1911, taken from the "Master Builder Journal," sums up succinctly the position of the building trade in Johannesburg. "The two outstanding features of the year have been the transformation of the central part of the town and the enormous amount of building in the outlying suburbs. Most building activity has taken place in Eloff and Joubert Streets, where Messrs. Norman Anstey's, Chudleigh's, and the African City Properties Trust have erected huge premises, while in the near future the Union Club and Y.M.C.A. building will further add to the attractions of this neighbourhood. Besides the above structures, the Orpheum and Bijou Theatres are also prominent in the vicinity. During the year more places of amusement have been built than in any previous year of the Rand's history, besides the two above-mentioned theatres the Grand, Lyric, Coliseum, and Niagara have opened their doors to the public. The latter has by far the largest hall in the country, and is capable of seating 5,000 people."

Distributing Centre.

"As Johannesburg has become the greatest distributing centre of the Union many large wholesale firms have increased their accommodation. . . . Further afield, the most noticeable feature has been the building up of the Berea and Houghton Estate. These two suburbs have become the educational centre of the town, at the King Edward VII. High School, John's College, and Girls' High School now being built in Barnato Park. Messrs. Clark and Sons, are not only magnificent buildings, but afford facilities for education equal to anything to be found in England. That they have proved a strong magnet is conclusively shown by the many fine villas surrounding them."

Important Buildings.

"Among public buildings the most important opened during the year were the Law Courts in Von Brandis Square, while a commencement has at length been made with the long-deferred Town Hall. As regards such works as drainage, street construction, etc., the Municipality has pursued the even tenor of its way, and has done quiet but unobtrusive work. The centre of Johannesburg is being kerbed and channelled at a cost of £100,000. Particular attention has been paid to road construction, and the majority of the eight hundred miles of streets are in excellent condition. The drainage scheme is being pushed forward steadily, and continuous work is carried out, mostly in small sections, so that the centre of the town enjoys the advantage of the water-borne system. Taken as a whole, Johannesburg contractors have little cause for complaint as regards the amount of work that came forward during 1911, and there is every indication that the coming year will see but little diminution in this respect."

THE ROYAL GOLD MEDALLIST.

At the meeting of the R.I.B.A. held on February 5th, the nomination was announced of Mr. Basil Champneys as a fit recipient of the Royal Gold Medal. The election will take place on March 4th.

NEWS ITEMS.

King Edward Monument at Cannes.

The monument which is to be erected at Cannes to the memory of King Edward VII. is the work of MM. D. Puech and D. Daumet, and is to be inaugurated towards the close of March.

Business Appointments.

Mr. L. Serrailier, manager, and Mr. R. W. Vawdrey, chief engineer, of the Indented Bar and Concrete Engineering Co., Ltd., Queen Anne's Chambers, Westminster, have been appointed directors of that company.

Workmen's Dwellings for Paris.

Baron Gustave de Rothschild has bequeathed to the Rothschild Foundation in Paris for the improvement of the condition of the working classes the sum of £40,000 to be spent in the purchase of land in or near Paris, on which are to be erected workmen's dwelling-houses.

Osram Lamps for the Post Office.

The General Electric Co., Ltd., have again obtained the contract for supplying the Post Office with metallic filament lamps during the next six months. The contract covers every type of Osram lamp for which they tendered from the 5 c.p., 25 volts. size upwards, and including 100 c.p. lamps.

Australian Commonwealth Offices in Aldwych.

A cablegram has been received by the Australian Government from the High Commissioner in London, announcing that he has appointed Messrs. Marshall Mackenzie and Son, architects, of Victoria Street, Westminster, to design the building for the Commonwealth Offices on the Aldwych site in the Strand.

Change of Address.

Messrs. Crosby Lockwood and Son, 7, Stationers' Hall Court, E.C., etc., announce that they have transferred their Technical Book Room from 121a, Victoria Street, to more commodious premises at No. 5, Broadway, Westminster, S.W. (opposite Vickers House), where a full representative stock of all the latest and most important engineering, technical, building, etc., books may be inspected.

Ruskin College, Oxford.

The foundation stones of the new buildings of the college in Walton Street were laid last week. The buildings will cost something over £9,000, and will consist of a hall, to be known as the Buxton Memorial Hall, in memory of the late Mr. C. S. Buxton, formerly Vice-Principal of the College, who bequeathed £5,000 to it unconditionally; a large lecture room; accommodation for fifty students; and a Vice-Principal's residence. Mr. Basil Champneys is the architect.

Wimbledon House Estate.

This estate, the remaining portion of which is to be put up to auction on February 24th by Messrs. Hampton and Sons, of Cockspur Street and Wimbledon, has had distinguished tenants. In 1791 it was sold to M. Calonne, who had been Prime Minister of France under Louis XVI. M. Calonne sold the property to Earl Gower, afterwards Marquis of Stafford. Louis de Bourbon, Prince of Condé, took refuge here in 1810, and eight years later the property was

acquired by the father of Captain Marryat the novelist. The forthcoming sale of the remaining portion of the estate, in sixty-one large and small plots, should make a strong appeal to builders, architects, and speculators.

New York's Water Supply.

The two great divisions of the Catskill aqueduct tunnel under the Hudson River at Storm King Mountain have been united, Mayor Gaynor having fired the blasting charge removing the last wall of the rock between the borings. The Mayor and his party were lowered to the shaft 1,100 ft. below the river, and walked thence to the point where the two sections were to be joined. The floor levels of the borings and the side walls met within a fraction of an inch. The new water system, which is acclaimed as one of the world's greatest engineering feats, is expected to be finished by 1913, and will supply the city with 500,000,000 additional gallons daily.

Glasgow Cathedral Roof.

Messrs. Geo. Laird and Son, the contractors for the re-roofing of Glasgow Cathedral, make the interesting statement that all the old oak that they have taken down is being retained by H.M. Commissioners of Works. Part of it, having been in the roof for about 750 years, is so decayed as to be useless, but a large part, when the surface decay has been removed, is thoroughly sound and good, notwithstanding its great age. Of this part a large number of the carved bosses have been made, and will be seen later on in the choir and transept roofs. They add that about thirty years ago they made a table for the Senate room of Glasgow University to the order of the late Professor Robertson, the thistle carved panels of which were made of old oak which was taken out of the north transept of the Cathedral in 1846.

Bessemer Memorial Laboratory.

The Bessemer Laboratory, which was formally opened by Sir Charles Allen, in the absence of Sir William Preece, at South Kensington last week, is a memorial to the late Sir Henry Bessemer, the inventor of the metallurgical process which bears his name, and it occupies a portion of the new building of the Royal School of Mines, which when finished will have cost about £150,000. The mining profession has already subscribed about £20,000 to commemorate the achievements of the great inventor, and this sum has provided an equipment which is believed to be unequalled in any educational institution of its kind in the world. This equipment is not yet complete, but the plant already installed will allow of the experimental treatment of ores by all the processes usually found in operation in mines. While the new laboratory will be an invaluable aid to the students in the mining school, for whom it is primarily intended, its use will not be confined to them. It has been decided to allow it to be used for private investigations by professional men, whose work and association with the school will, it is anticipated, be of no little advantage to the students themselves. The laboratory is a low, glass-covered building, occupying a considerable area of ground, and it is so constructed that the maximum of light is obtained, while ample space is left around the machines, which are worked under conditions approaching closely to those of practical mill work.

SOCIETIES AND INSTITUTIONS

LIVERPOOL ARCHITECTURAL
SOCIETY*The Old Buildings of Snowdonia.*

On taking the chair of the fifth ordinary sessional meeting of the Liverpool Architectural Society, last week, Mr. A. Thorneley (president) reminded the members of the invitation of the Birmingham Architectural Association to inspect the New Art Galleries of that city on February 23rd. He called upon Mr. Herbert L. North to read a paper on "The Old Buildings of Snowdonia." The lecturer, having remarked that the simple types of buildings in Snowdonia harmonised with the varied landscape, recommended visits to North Wales in winter, the aspect of the country being at present glorious. He proceeded to describe the early and square Celtic churches and to trace the introduction of chancels by the Latin monks, after which he illustrated the development of domestic architecture.

THE CONCRETE INSTITUTE.

A meeting of the Concrete Institute took place at Denison House, 296, Vauxhall Bridge Road, Westminster, S.W., on February 8th, Sir Henry Tanner, C.B., I.S.O., F.R.I.B.A., presiding. The following were elected members: Mr. Ewart S. Andrews, B.Sc., London; Mr. H. Percy Boulnois, M.Inst.C.E., F.R.San.I. P.P.I.Mun. and County E., London; Mr. David Donaldson, London; Mr. William E. J. Fett, Hull; Mr. James A. Malcolm, London; Mr. L. R. Nicol, Padstow, Cornwall; Mr. George S. Roberts, London; Mr. J. Vaughan Stewart, jun., Lebu, Chile. It was announced that the Council had admitted Mr. Wilfrid Lever, of Ashton-under-Lyne, as a student.

A paper by Professor Beresford Pite, F.R.I.B.A., entitled "The Aesthetic Treatment of Concrete," read at the summer meeting, was submitted for discussion, in which the following took part:—Mr. Arthur T. Bolton, F.R.I.B.A.; Mr. E. Fiander Etchells, F.Phys.Soc.; Mr. A. Alban H. Scott, M.S.A.; Mr. L. Serrailier; Mr. Herbert Shepherd, A.R.I.B.A.; Sir Henry Tanner, C.B.; and Mr. E. P. Wells, J.P.

LOWER THAMES VALLEY DISTRICT
SURVEYORS' ASSOCIATION.

A well-attended meeting of the above association was held at the Town Hall, Twickenham, on February 3rd, when the president, Mr. Edward Willis, A.M.I.C.E. (engineer and surveyor to the Chiswick Urban District Council), presided.

The association had under consideration the effect of motor-omnibus and similar traffic on roads which were not constructed for this class of traffic, and passed a resolution with regard to the same, and forwarded a copy to the Institution of Municipal and County Engineers for their consideration.

The discussion was continued of Mr. Jeffes's paper entitled "Some Notes on the Construction, Laying-out, and Making-up of Private Streets." The discussion was further adjourned until the next meeting.

The association also had under consideration the question of advertisement signs of all classes, and this topic was discussed at considerable length.

YORKSHIRE FEDERATION OF
BUILDING TRADES EMPLOYERS.

The monthly meeting of the executive council of this Federation was held in the Town Hall, Bradford, on January 18th, when Mr. J. Townsley, president, occupied the chair, and was supported by forty-six delegates from the federated associations.

It was reported that a protest with reference to the National Insurance Act had been supplied to all the local associations affiliated with the Federation, together with all kindred building trade associations in Yorkshire.

It was decided to request Government departments, local authorities, and architectural societies to include an item in all quantities in future to cover the increased charges for workmen imposed by recent legislation, and that the National Federation be invited to take similar action to secure uniformity.

It was resolved that difficulties having been experienced in Yorkshire with reference to the employment of non-unionists, this Federation affirms that freedom of employment is of vital importance to employers, and requests the National Federation to endorse this principle.

It was reported that notices had been received from the operative societies in the following cases: *Bradford and Shipley, joiners.* Increase of wages from 8½d. to 9½d. per hour together with other alterations of rules. *York, joiners.* Notice of increase of wages from 8½d. to 9d. together with other alterations. The local associations were instructed to take the notices into careful consideration, and inform the Federation whether there is any matter upon which their assistance would be helpful or their intervention was desired.

It was reported that the Bridlington Association had consented to an increase of wages to labourers from 5d. per hour to 5½d.

It was reported that the Huddersfield Corporation had requested the Federation to supply them with a copy of the letter and enclosure which had been submitted for their consideration on the subject of contractual referees, in respect of public contracts. These had been supplied, and it was hoped that as a result the request for the incorporation of an independent arbitration clause would receive equitable and favourable consideration.

Attention was drawn to the revised fair trades clause as recently adopted by the West Riding County Council, and particular notice was drawn to the fact that the clause incorporated a provision, "but it shall not be a condition that trade union men only shall be employed." It was stated that a copy of the revised clause would be forwarded to the local secretaries and representatives in order that members may be made aware of the new provisions.—Condensed from report supplied by J. DAVIDSON, secretary.

BARROW-IN-FURNESS MASTER BUILDERS'
ASSOCIATION.

The annual meeting of the above association was held on January 30th, when, after the usual routine business, the election of officers resulted as follows: President, Mr. Edgar Banks; vice-president, Mr. Wm. Morris; secretary, and treasurer, Mr. J. Baker; auditors, Messrs. R. F. Miller and Co., C.A.

Negotiations are pending with the joiners, bricklayers, plumbers, and painters in respect to an advance in wages and the question of boundaries.—Condensed from a report supplied by J. BAKER, secretary.

DANGEROUS IRON ROOF GUTTERS.

A correspondent asks whether it is not time that something should be done to prevent the jerry way these iron gutters are fixed. He complains that, in the absence of any by-law to the contrary, they are fixed any way and by anybody, some with nails, some with screws, against a flat fascia board (and sometimes the board itself not properly secured). In a short time the heads of the nails or screws rust away, the holes in the backs of the gutters become larger, and when a fall of snow takes place the weight of the snow simply pushes the gutter away from the fascia board. The average weight of a 6 ft. length of gutter is about 30 lb., the weight of snow making it much heavier. Fatal accidents from falling gutters have been frequent, and it is suggested that all moulded gutters weighing from 18 lb. upwards be fixed on brackets 1½ in. wide by not less than a quarter of an inch in thickness, and the brackets screwed to the end of the roof spars, or wall plate (in all good jobs this is done). In ordinary light guttering, where there is a fascia board, the board itself should be properly secured and the gutters screwed to it with strong brass screws.

TRADE AND CRAFT.

Hygienic Heating: A New Radiator.

It is generally recognised that electric heaters, either of the radiator or convactor type, form the most healthful means of raising the air of a room to a comfortable temperature. When electric heaters are used, no actual combustion takes place to produce the heat, and the air is not impoverished by loss of oxygen, or made impure by the formation of gases injurious to health. With all forms of artificial heating, however, it is necessary that the air of the room should be renewed at a constant rate, and generally a means of communication with the outside atmosphere should be provided. This is also true with electric heating, not because the air is vitiated, but because any form of heat produces dryness and a loss of humidity. That the air we breathe should possess a certain degree of humidity is necessary to health as well as to comfort. If a person remains in a dry atmosphere for any length of time, an unpleasant feeling is caused in the mouth, and there is produced a general sensation of depression. Any arrangement, therefore, which while heating the air also supplies it with the necessary humidity, must be most suitable. Further, it is important to remember that with electric heating the air is not depleted of its oxygen, and the rate at which the air in a room is changed when using the type of heaters here illustrated need not be any higher than that for the ordinary ventilation required by human beings. A modified form of radiator has been designed to produce the required degree of humidity in the atmosphere. The heaters in question are made up in two and four lamp patterns, and have been introduced by Messrs. Simplex Conduits, Ltd., of 116, Charing Cross Road, W.C., and Garrison Lane, Birmingham.

LONDON'S KING EDWARD
MEMORIAL.

The Mansion House Fund for providing a memorial to King Edward in London now amounts to nearly £68,000, which includes a promised contribution of £5,000 from the receipts of last year's Coronation Exhibition. Mr. Bertram Mackennal, with Mr. Edwin Lutyens, the architect, is making a model of a proposed statue of the King to be erected at the Piccadilly end of the Broad Walk in the Green Park. This will be ready for the inspection of the Mansion House Committee towards the end of this month.

With regard to the scheme which contemplates the acquisition of Shadwell Market and its conversion into a park or open space, the Corporation of the City of London, who are the freeholders, estimate the value of their bondholders' interest in the site at £140,000, but they are willing to transfer that interest to the committee for £73,000. The London County Council, in response to an appeal by Sir Vezev Strong, the chairman of the fund, have agreed to purchase for £14,000 the site it now holds on lease from the Corporation at the market, and to throw in other property worth £4,000. The Poulter Trustees have offered a contribution of £5,000. As there will be a considerable balance in hand—probably £40,000—after the Green Park statue has been erected, the chances that the Shadwell Park scheme will be carried through are exceedingly favourable.

BIRMINGHAM UNIVERSITY TOWN
PLANNING LECTURES.

Mr. Raymond Unwin, F.R.I.B.A., lecturing at the University last week, dealt with the development of town-planning in the city of Paris, explaining how the boulevards of the city sprang up along the line of abandoned fortifications dating from the later part of the 17th century, and how they were very largely extended by the incorporation into the growing town of many parks, drives, and avenues which had been laid out in the country around Paris at the end of the 17th and the beginning of the 18th centuries. The planning of the early American towns was next dealt with, showing how the tradition of the 17th century planning in Europe was carried on in America, the square type of plan being represented by Penn's lay-out of Philadelphia, and the Parisian type of planning being followed by L'Enfant, Washington's engineer, who laid out the capital city of Washington.

The lecturer showed how the gridiron plan for the city, as originally planned, was most inconvenient for the large cities which had developed upon it, and was entailing costly schemes of remodeling such as are being carried out in Philadelphia and are contemplated in Chicago and many other cities. The lecturer illustrated the splendid work that has been done in many of the American cities, securing large areas for parks on the outskirts of the town, reserving for public recreation the sea front and the foreshore of the great lakes for considerable areas, and the creation of parkways or wide boulevards encircling the town and linking up the different parkways one with the other. Notable examples of this enterprising foresight are to be found at Boston, Philadelphia, Chicago, and in Washington itself.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
FEBRUARY 21st, 1912.

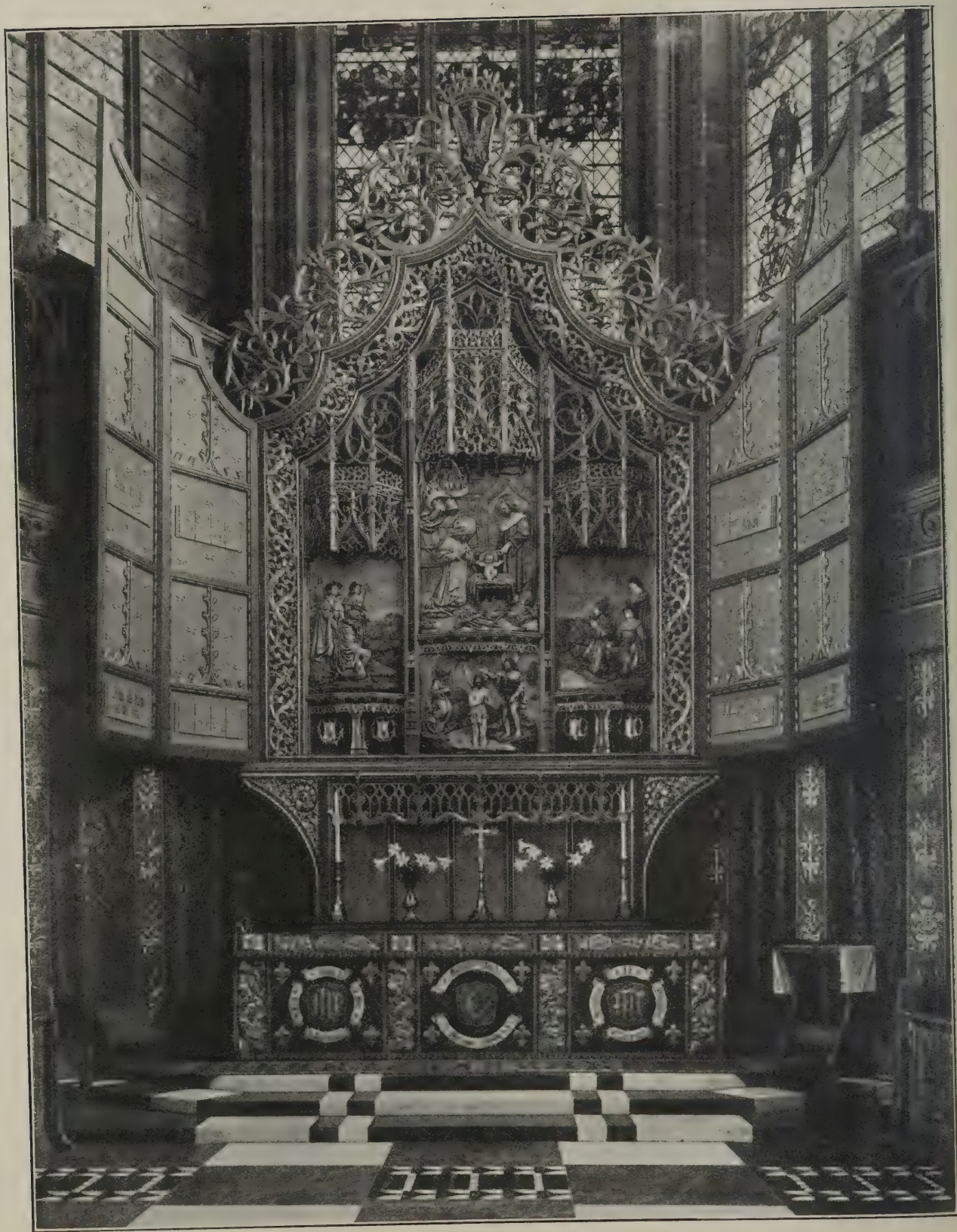
Volume XXXV,

No. 892.



SITTING-ROOM BAY, THE MURREL, ABERDOUR, FIFE. F. W. DEAS, F.R.I.B.A., ARCHITECT.

This room faces north-west. The casements are of teak, the tops of the bays being covered with lead. The floor is laid with oak boards in irregular widths.



REREDOS IN LADY CHAPEL, LIVERPOOL CATHEDRAL. G. GILBERT SCOTT, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.


FEBRUARY 21st 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 892.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The London Society.



A public meeting on February 9th a society was formally inaugurated which, under the title of "The London Society," is to undertake to bring about the artistic improvement of London. The founding of a society for such an object in a capital city is rather an unusual—we are not sure that it is not an unprecedented—event. In Paris there is the "Vieux Paris" Committee, it is true; but this is a society for protecting ancient work, not for inaugurating modern improvements. Why is it that such an undertaking is considered necessary in London?

The reason seems to be that in London neither the Imperial nor the municipal government concern themselves much with any question of the artistic improvement of the capital. In Paris the artistic improvement of the city is an object of the greatest solicitude both with the State Government and the Municipal Council; so far from requiring any spur to be applied to it in regard to such matters, the Municipal Council of Paris has sometimes been accused, by its own citizens, of putting considerations of æsthetics above those of public convenience and utility; a noble error at all events if there is any ground for the accusation. In London both governments, Imperial and Municipal, are primarily utilitarian in their aspirations. The Imperial government, in fact, hardly intervenes at all in questions concerning the improvement of its capital; that it does nothing to assist was one of the complaints made against it by one speaker, Lord Alexander Thynne, at the meeting in question. There is the Office of Works, certainly; but the Office of Works only intervenes in questions of detail in which sites or monuments which are the property of the Government are concerned; it deals in no large schemes of metropolitan improvement, and in the detailed schemes which have come officially under its hand it has nearly always done the wrong thing, and spoilt the opportunity. One reason for this doubtless is the system of appointing a First Commissioner of Works for political motives, and not because he has any special knowledge or ability in regard to architectural work. The London County Council for one moment woke up to a sense of the æsthetic element in London improvements when it instituted an architectural competition for the treatment of Kingsway and Aldwych; but it quickly took fright at its own efforts when it appeared that they would check the letting or sale of building sites; relapsed into its normal utilitarian attitude; and the great competition failed of any of its expected effects. The City Corporation is even more, and more avowedly, utilitarian; it is contemptuous of those who regard a bridge in any other light than as a roadway for traffic. Some of these people would pull down St. Paul's, if they thought they could improve road communication thereby; they very nearly did succeed in getting St. Mary-le-Strand destroyed, in order to improve the roadway and please the shopkeepers.

In these circumstances the creation of a society which would devote itself especially to the artistic improvement of London would be a great advantage, provided that they

can formulate a definite programme, and (which is after all the main point) that they can command influence enough to get it carried out. What are the Society's distinct aims, and what its influence is likely to be, must be all a matter of conjecture until we know who the committee are to consist of and what are their leading ideas; the opening meeting merely established a resolution to form the society and select an executive committee. Some general indications may, however, be deduced from the discussion which then took place. In regard to the importance of continuity in city improvements, reference was made by one speaker to the interesting fact (not very generally known) that the great schemes of street improvement carried out in Paris by Haussmann, under the Second Empire, were mainly a development of the general lines of a scheme which had been formulated more than a century earlier, and laid down on various tentative plans published from time to time. It was, however, a mistake to credit Haussmann with the Rue de Rivoli, the western portion of which was in fact laid out under Napoleon's orders in 1802; Haussmann merely completed it eastwards; but the record of Paris is valuable as showing how important it is to have long preconceived ideals to work up to. That is what we have never had yet in regard to London.

The special note of the meeting seemed, however, to be the necessity for comprehensive action and a comprehensive scheme. This seems peculiarly necessary in regard to London, owing to its vast extent and the remarkable local differences in what one may call its architectural scenery. As the chairman (Sir Aston Webb) remarked in his speech, the management of London is cut up into so many parts that it is difficult to think of London as a whole, and see what it requires. But it is not only the management—that is a matter of administration; it is the appearance and style of different districts. Whole quarters of London seem to have been laid out and built under one special influence, and according to one special taste or custom; we have the cemented districts, like South Kensington; the plain brick districts, like the Bloomsbury streets; the æsthetic house districts at Chelsea and in the quarters adjoining Sloane Street; and so on. A visitor transported blindfold from one of these districts to another might very well suppose that he had visited so many different towns in different parts of the country. We cannot undo this heterogeneous character of London, except by very slow degrees. What would serve to bind the several parts together into a rational whole would be a comprehensive scheme of street improvement, and the provision in each district of cardinal points whereat might be erected important buildings, referable to some wider and higher standard of architecture than the mere fashion of the district. As the chairman said, town-planning schemes are springing up all over London, and if they are carried out without reference to a great central scheme, confusion will arise. Professor Pite touched on the same idea; London, as he truly remarked, "had been developed haphazard," and those people who loved beautiful things loved them in a disorganised way; to bring about any improvement in this state of things required both unity and pertinacity of action.

The spirit in which the London Society is to act seems to be suggested in the chairman's remark that they wished

“to create a public opinion” which would support public authorities in carrying out different schemes which might appear to be beneficial to London as a whole. The effort, then, seems to be to organise public opinion, and so we come round again to the subject of organisation. The President of the Royal Academy, in a letter which was read, said he thought that the Society ought to be able to give material help to the Government, or to any municipal body charged with the erection of public buildings or the laying out of new streets. So it ought; but the question remains, Do the bodies in question want to be, or will they consent to be, thus helped? It is perhaps true, as Sir Thomas Brock subsequently remarked, that in London the artistic side of a new undertaking is not considered because it is suddenly sprung upon us. There is a good deal in that; we are not naturally an artistic nation, and when an official body which propose some important public improvement are suddenly told that they have neglected the artistic side of the matter, and that their scheme is very faulty in that sense, they are surprised and hurt to hear that they are neglecting their duty; their actual feeling, if not expressed in words, probably is—“We never knew that there was any artistic side to it.” If the London Society, by creating an organised public opinion on art, can get English officials into the habit of seeing that there is an artistic side to things, they may in time effect a considerable improvement, so far as moulding taste and opinion goes. Can such a society do more than that? If they are to have public schemes submitted to them for criticism and improvement, that can only come about in one of two ways. They must either succeed in persuading the official authorities that the Society’s good opinion is so valuable, and is so much looked for by the public, that these bodies will in their own interests desire to have it and act upon it; or they must acquire some State recognition which will render it incumbent on official bodies to submit their schemes for the approval of the Society. The latter alternative is not a probable one; it might be better if it were. Whether the first-named condition may be brought about will depend a good deal on the constitution and membership of the Executive Committee.

One obstacle which there may be to the discussion and criticism of improvement schemes in advance was let out, with rather amusing *naïveté*, by one of the last speakers in the discussion, a member of the Improvements Committee of the London County Council, who said that the Committee did not like to say much about intended schemes, for fear of its effect in putting up the values of property which might have to be acquired. So there we come round again to utilitarianism.

The Picturesqueness of Bridges.

CONSIDERING that the last meeting of the Architectural Association was a joint meeting of the Association and of the Society of Engineers, the members of the latter society must have felt rather left outside by Mr. Waterhouse’s paper on “Bridges.” There was nothing in the paper treating of bridges from the modern engineer’s point of view, which is almost entirely a structural one. Mr. Waterhouse spoke mainly of the charm of various ancient stone bridges; bridges mostly of many arches, such as no engineer would be allowed by a river authority to build now, the modern requirement being to have as few piers as possible to interfere with the waterway. Most of these ancient bridges had rather heavy gradients, which are also forbidden to the modern bridge-builder. The engineer who undertakes a bridge nowadays in any place where there are official authorities (generally two different ones) controlling the bridge and its approaches, and controlling the river and its traffic, is rather squeezed between two contradictory requirements. On the one hand, he must not approach the bridge, or rise from the bank to the crown of the bridge, by more than a certain limited gradient; on the other hand, the river authority will demand from him a certain minimum of headway

above the water-level. Between these two demands the thickness of the bridge at the crown becomes also reduced to a minimum, and that is one of the arguments—always a strong and sometimes an unanswerable one—used by engineers to justify the preference for a steel span in place of a stone or granite arch. The conflicting requirements, they urge, cannot be satisfied by any other means; and though this argument may sometimes be rather speciously used, there are no doubt cases in which it is no more than the truth.

There can be no manner of doubt, however, that the ancient stone bridge of many arches was, in the picturesque sense, the most beautiful kind of bridge ever built; and it was a real pleasure to see so many examples of these structures put before us in the lantern enlargements from many of the late Mr. Alfred Waterhouse’s beautiful sketches, which were the chief illustrations used. These old stone bridges, with their broad surfaces and perspective of arches, seem to form a part of the landscape; they cannot be removed from a scene without altering its character and in general spoiling it. If we are not allowed by modern legislation to erect new bridges in this form, let us at least try to preserve those that now exist, and not assent too hastily to assertions that this or that old stone bridge, on account of its gradient or its insufficient width, is inadequate for its modern uses. Often these assertions are made very lightly, by official bodies who want to be doing something which can be called a public improvement. Often the alleged inconvenience is a very slight one, not in the least worth spoiling a beautiful scene on account of it. Especially should we endeavour to preserve the more important masonry bridges over the Thames in the neighbourhood of London; structures which combine picturesqueness with (as Mr. Waterhouse said of Richmond Bridge) a certain dignity of design that reminds us of the neighbourhood of a great city. Many, too, of the small single-span road bridges in country districts seem an integral part of the landscape, and it is not worth while to remove them merely because they show a slight crest which the wheeled traffic has to overtop. To pull down one of these and substitute a steel bridge, as has been done in some cases, is to lose a beautiful feature in the scene in order to avoid a very slight inconvenience. One eminent engineer, Mr. Francis Fox, whose name deserves to be mentioned with honour in this connection, is so convinced of this that he has saved many old country bridges from destruction by obtaining permission to repair them by his system of pumping liquid cement grouting into their joints, thereby rendering them stronger than ever, in spite of an outward appearance of dilapidation.

But this kind of feeling among engineers is, I fear, exceptional. Most engineers, when called upon to construct a bridge, wish to make it with steel spans, even if they give way so far as to admit masonry piers. It is the practical view, and we believe a perfectly sincere one, that this is the best and most workmanlike manner of doing it; and, as we have admitted, there are cases in which the official requirements cannot be met in any other way. We have had some fine examples of granite bridges lately, notably the one at Putney, which, though plain, is in every respect excellent, and supersedes an exceedingly picturesque old timber structure which was undoubtedly dangerous to the river traffic, especially in strong tides, and it was gratifying to find that, in spite of considerable engineering opposition, the new Kew Bridge was finally ordered to be built of stone; but in this case the choice of material was the only satisfaction; the detail is coarse and commonplace, far inferior to that of the old bridge which it succeeds. It is not very easy to understand why it is that these eighteenth-century stone bridges, though they were certainly not built by people who called themselves architects or were so by education, show such refinement of detail, while the stone and granite bridges built by engineers of the present day are seldom satisfactory in this respect. There seems to have been a certain feeling for refinement in masonry detail in those days which has evaporated now. The former Kew Bridge

with its comparatively narrow arches, was an inconvenience and even, in strong tides, a danger to boats; but it was charming to look at, and the present one is not.

A steel girder bridge may be unobjectionable in point of taste—what generally spoils it is the attempt to make it what is called “ornamental”—but there cannot be any pretence that it can ever be as fine an object as a masonry bridge. It is, in fact, objectionable in this sense either in the country or in a city. In the country it shows a manufactured and painted material which is quite out of harmony with the landscape; in a city it shows thin lines which are out of harmony with the architecture on either bank, while the masonry bridge has the fine effect of carrying the city architecture on to and across the river. It would be a great loss to London if we are to have no more such bridges in the city and in the country neighbouring on London. Is such a loss really necessary? We suggest that the requirements by river authorities are sometimes excessive, and might be relaxed with advantage. Such authorities seem to think of nothing but demanding a minimum of piers in the water-way; a demand which is sometimes much in excess of the real necessities of the case. It was this demand in the case of Vauxhall Bridge which rendered it, according to the engineer (who was very likely right so far), imperative to have steel spans. The demand was really absurd; one pier more in the river would have been no obstruction to the river traffic, which, in fact, amounts to nothing more than a few barges and an occasional small steamer. There is not much more at Lambeth, yet we are threatened with a steel bridge at that point under the same pretext, which is quite an exaggeration of the real requirements of the case. And one special reason for having a monumental bridge at Lambeth is that there is some likelihood that, in the future development of London street improvements, the passage over Lambeth Bridge may become a main route from Victoria Station to east London. And there is another thing to be said for the masonry bridge, especially if of granite, that it is likely to last much longer, and does not require painting, and upkeep, and repairs, as the steel one does. The latter is an economy at the outset; but it is questionable whether in the long run the economy is not the other way.

The subject of the treatment of bridges as streets has been mooted of late; and the idea might be welcomed for one reason, that it would absolutely necessitate masonry bridges. But otherwise there is not so much to be said for or against the idea, where, as in London and in most large cities with a river flowing through them, there must necessarily be a considerable number of bridges; the erection of houses on all of them would very much check that circulation of air up and down the river which must be beneficial to the health of the city. It is argued that people would be so glad to be able to cross the bridges, in wintry weather, without being exposed to the weather on the open bridge. We should think there were few who would not prefer the view of the river instead of being still in the midst of a street while crossing it. For London in particular, look at the fine views of St. Paul's in one direction, and the Houses of Parliament in the other, which we get from a bridge looking up or down the river. We should lose all that; we should lose half the spectacular beauty of London.

Some remarks were made at the Association meeting in regard to the beauty of suspension bridges, rather in an accent of defence, as if it were surprising to find that they always looked well. There is nothing surprising in it at all; the suspension chains represent a curve formed by the operation of natural equilibrium, and curves which are formed by the forces of nature are nearly always satisfactory to the eye. A suspension bridge can hardly help looking well; but except on a small scale it is not a practical form of bridge, being too much affected by moving loads. The suspension bridge at Clifton is a beautiful object spanning the picturesque gorge of the Avon, but there is a nice up that vehicles must keep to a walking pace over it; and that will hardly do where there is any important amount of traffic.

The question was raised at the meeting, not unnaturally, who was to be considered the leading mind in the case where an engineer and an architect were jointly commissioned to undertake the design of a bridge? There can be no doubt that the engineer takes the lead; a bridge is primarily an engineering construction, and the engineer is responsible for all that is under water; that is, for the foundations on which the bridge depends for its very existence. But engineer and architect should be appointed from the first, and should work together. To bring in an architect, after the engineering design is settled, to put architecture on to it, as it were, would be taking quite a wrong view of the functions both of architecture and of the architect. The whole design should be considered together by the two, working as collaborators. It is an idea that can hardly be said to have obtained recognition hitherto either in England or, as far as we know, elsewhere; but there is nothing in reason against it. It is only what is done in France, in the case of every public statue, where an architect is always appointed together with the sculptor to undertake the architectural details of the pedestal. An arrangement which works well with sculptor and architect is surely not out of the question in the case of engineer and architect. It ought to be a recognised practice in all cases of bridge design.

Royal Academy Lectures.

IN his third lecture on architectural drawing and illustration at the Royal Academy, on the 12th, Professor Blomfield spoke of the French draughtsmen of the seventeenth century, with special mention of the work of Lepautre, whose grand style of drawing was illustrated by a good many examples. In his concluding lecture on Thursday he took for his subject the Italian draughtsmen of the eighteenth century, and Piranesi, but the work of the latter was the main subject of the lecture, Piranesi being an artist who stands quite apart from other draughtsmen of the period, as perhaps the greatest genius who has ever devoted himself to the illustration of architecture. His industry, and the immense amount of work which he accomplished, were as remarkable as the grandeur of his style. It had been said that he worked direct on to the copper in his etchings, but this was at all events not always the case, as the lecturer had found drawings by him in the British Museum which had evidently been made in preparation for some of the etchings. Professor Blomfield referred to the extraordinary set of drawings called the “*Carceri d'Invenzione*”—“dream prisons” it might be translated—in which, as he pointed out, Piranesi had entirely quitted his usual darkly shaded and heavily worked style, and his needle seems to have been rushed over the plate in a kind of frenzy of inspiration, in the hurry to get his idea into shape. There is an element of something approaching to insanity in this set of plates, extraordinary and imaginative as they are. Other plates in his more usual manner were shown, but we should have liked to see more of the examples of his solidly drawn purely architectural subjects, such as his view looking into the Pantheon from the portico. But Professor Blomfield did full justice, in the literary portion of his lecture, to Piranesi's extraordinary genius.

The Late Mr. T. M. Rickman.

THE death, at the age of 84, of Mr. T. M. Rickman, removes from us one who may be said to be the last link connecting us with the early Gothic revival. His father, Thomas Rickman, F.S.A. (1776–1841), published in 1817 the first real text-book of Gothic architecture, under the title “*An Attempt to Discriminate the Styles of English Architecture*.” It is out of date now, of course, but for its day it was a remarkable piece of architectural analysis, and laid the foundation of the division of Gothic architecture into recognised styles; and his nomenclature for the styles is still partially in use. He built a good many churches,

which show curious evidence of the manner in which Gothic architecture was regarded in the earliest period of the revival, when it was considered sufficient to copy the details in any material, regardless of the real structure of Gothic architecture. We remember one church of his, probably still existing, in which the aisles were ceiled with an imitation in plaster of the lines of a fan vault, but reduced to a flat surface. But he was a pioneer in the Gothic revival movement, and "Rickman's Gothic Architecture" was for many years a recognised text-book. His son, the late Mr. T. M. Rickman, practised chiefly, we believe, as a quantity surveyor, but he had many interests outside of his profession, and was a very pleasant and interesting person in conversation.

The Late M. Mathurin-Moreau.

WE regret to announce the death of this very eminent French sculptor, who may be said, however, to belong rather to the last than to the present generation of French artists, having died at the age of 91. His works are not so numerous as those of some of his French contemporaries in sculpture, but he produced one group, "Les Exilés," which may be said to be one of the finest combinations of pathos of expression and power of modelling which modern sculpture has created. The "Exilés" are two, an old man, his head bowed down with a powerful expression of indignation, his heavily draped figure contrasted with the nude figure of his son, who endeavours to console him. The group is now in the Tuileries Gardens; hardly the place for it; it should hold a place of honour in some important art-museum. All Mathurin-Moreau's work is that of a gifted artist who took his art seriously, and nothing that he did but was careful and refined in execution; but "Les Exilés" is one of those rare works of sculpture which may be said to have a kind of moral grandeur of expression, and will always remain his best monument.

Anglo-Indian Ideas of Architectural Competition.

A CORRESPONDENT sends in a copy of an advertisement which has appeared in the Indian paper "The Pioneer," published at Allahabad. It states that plans and estimates are required for the erection of the Indian Officers' Club and Boarding House at Jhelum; "a prize of Rs. 100 is offered for that selected." Nothing is said in the advertisement about any further advantage to the author of the best design, as to being employed to carry out the building, etc. One hundred rupees, at the present rate of exchange, is about £6 10s.; and it is for this sum that the Deputy-Commissioner of Jhelum expects to get the best design and plan for an Indian Officers' Club. To whom is such an advertisement supposed to be addressed? To the native builders, one would imagine.

The Position of the Architect.

IN our issue for January 24th, we drew attention to a few points in the important report of a Committee on Education of the American Institute of Architects. There are two other points worth notice in that Report. One is the decisive opinion expressed in regard to the question of "State licensing *versus* Institute licensing," that "in the opinion of this Committee a man should be tried, tested, and admitted to practice by his peers—that is, the American Institute of Architects—precisely as a lawyer is admitted to the bar by his peers." The other point is the very strangely expressed opinion as to "the lack of knowledge of the most rudimentary architectural ideas, and a corresponding contempt and disregard therefore, exhibited by many engineers." We know something of that, too, in this country, though there is a slowly growing perception among the public, of late years, that engineers cannot be safely entrusted with the architectural treatment of important constructions, such as bridges. And the American Report sums up the matter

by saying that the training of an architect gives him a singularly broad and comprehensive vision, while that of the engineer is so "intensive" that it frequently produces "mere narrow-minded specialists." To put it shortly, architects understand a great deal more about engineering than engineers do about architecture, only one can never get the engineers to see that; they think that architectural design can be produced by the light of nature, without any special study.

Modern Construction.

IN the present issue we publish two articles of architectural and constructional interest dealing with the design and erection of two modern buildings, both notable of their kind, though differing entirely in spirit and character—Liverpool Cathedral and the new Whiteley's. And we would take this occasion to remind readers that we are always ready to consider contributions of this nature. We have our own sources of information and means for keeping in touch with what is going on in the building trades and in the architectural profession throughout the country, but it may very well happen that some building of interest is erected without our having heard of it, more particularly if it is a private building of which no information is furnished through the ordinary newspaper channels. We shall be very glad, therefore, if readers in any part of the country will communicate with us in the event of their being able to direct our attention to some notable new work of construction which has hitherto passed unrecorded. Modern buildings, indeed, merit the closest study, for they embody solutions of the problems that we have to face to-day: whereas old buildings, having been erected under totally different conditions, are often barren of value except from the standpoint of design.

Two Picture Exhibitions.

AT the Leicester Galleries there is a small collection of water-colour paintings of Indian architecture by Mr. Reginald Barratt, whose beautiful work in illustration of the architecture of Venice and of India is familiar to all frequenters of the Gallery of the Society of Painters in Water Colours. Some of the works here have been exhibited there; among those which we do not remember is a large and very fine drawing of the fort of Gwalior, one of the finest pieces of architecture to be found in India. There is a beautiful drawing of the Taj Mahal also. Mr. Barratt is one of the few painters who can treat architecture with thorough knowledge and appreciation of detail, and yet preserve a perfectly balanced pictorial effect. At the same Gallery is a collection of water-colours by Mr. A. W. Rich, who has advanced greatly in his art since his first rather crude contributions to the New English Art Club. Many of these, slight and broad in execution, contain very fine landscape effects. Mr. Claude Shepperson's exhibition also at this Gallery, though including a certain amount of rather trivial and sometimes grotesque work, contains plenty of evidence of brilliant talent, though it seems rather thrown away on some of his subjects.

At the Gallery of the Society of Fine Arts there is a collection of water-colours of garden scenes by Mr. G. S. Elgood who has established a reputation in the painting of this kind of scenery, especially of old-fashioned gardens with clipped trees. His work is as good as ever, but there seems perhaps a little sameness about it. What interested us more, at the Fine Art Society, was a collection of pieces of old stained glass, the property of a collector who now wishes to dispose of them. They are not on view in the exhibition galleries, but arrangements have been made for showing them properly, by transmitted light, to anyone who wishes to inspect them with a view to purchase. There is a chance for those who wish to secure a panel or two of old glass for their houses. There is one splendid bit of English glass, said to have come from Salisbury Cathedral; and there are good curious and interesting bits of old foreign glass, besides other English examples.

ON THE NEED FOR AN ENGLISH SCHOOL OF ARCHITECTURE.

Professor Simpson's Views on the new R.I.B.A. Scheme.

TO the opinions of Professor Reilly, of Liverpool, on the need for an English school of architecture, and the possible effect of the new problems in design set for the Final Examination of the Royal Institute of British Architects (as published in our issue for January 31st), we may add the following opinions of Professor F. M. Simpson, F.R.I.B.A., of University College, London. In the course of an interview with a representative of this Journal, Professor Simpson said:—

"The scheme undoubtedly has good points, but I think it also has defects. I understand that the matter is to be reconsidered before next session, so I do not wish to enter into detail now, but the two chief defects to my mind are—(1) The subjects are not 'set' as I understand the word. Little more is given than the titles of subjects, so that the picture which Professor Reilly draws of the meeting of two students working on these designs would hardly be possible under the present syllabus. It is more likely that after a few minutes' conversation one would say to the other, 'Oh! but my problem is altogether different from yours; my site is different, my aspects are different, my accommodation is not the same. Good-bye.' (2) The second defect, it seems to me, is the impossibility of maintaining a standard if designs are to be 'approved' (which presumably means certified as reaching a certain standard) by local societies. These societies are not in touch with one another, and, in the majority of cases, their members have had little experience in judging students' drawings."

Asked whether he thought it possible to examine a student in architectural design, and, if so, how, Professor Simpson said: "This, of course, is a very old question, and one which has not yet been satisfactorily answered. The Institute ask for four approved designs as Testimonies of Study, and, in addition, set a subject and give the student three days in which to work it out. The first day is for the sketch, and two whole days—a liberal allowance!—for its elaboration. These three days are either too much or too little. If there must be a 'scramble,' which I deny, let it remain a short and merry one. The solution suggested by me more than twenty years ago is, I still think, the right one. At that time there were no schools of architecture in England, and the Association were considering a day scheme of education, which, unfortunately, was not carried through. In an article which I wrote four years before being appointed to the Chair of Architecture at Liverpool, and which appeared in 'A.A. Notes' for April, 1890, my views on design were thus expressed:—'I do not think I am at all singular in holding that it is impossible to examine a man in architecture. By examination you can find out, perhaps, what practical knowledge he has, what his acquaintance is with the history of architecture, but that is all. It is only in his designs that he can show whether or not he is a good architect. The Institute gives one day to the design; a week would be none too much. Many a man can make a pretty enough drawing to $\frac{1}{8}$ in. scale who comes utterly to grief over the $\frac{1}{2}$ in. and full-size details. As I said before, I do not think you can examine a man in architecture. To do so you would have to shut him up for two or three months, and let him make designs; and that is impossible. The next best test, it seems to me, is the work done by students during an entire year from subjects set by visitors or masters. The Institute, of course, cannot manage that now; but if the suggested education scheme comes into force, then it can be managed, and that one of the chief reasons, in my opinion, for supporting the change.'"

"How, then, do you think the suggestion you make could work out?"

"In the following way:—

"(1) Design should be kept quite apart from the Final paper examination, and the existing scramble should be deleted altogether.

"(2) Four designs, as suggested, should continue to be set every year (alternatives permissible) by the Board of Architectural Education, but in consultation with the heads of the different architectural schools throughout England (if possible Great Britain). This consultation is, in my opinion, essential for success, and would help greatly in bringing the schools into touch with one another, and also into touch with the Board of Architectural Education.

"(3) Students should prepare their sketch designs unaided outside the school (or inside under restrictions), and should hand them in to the master of the school, who would retain, date, and initial them; the students keeping tracings.

"(4) In due course *both designs and sketch designs* should be submitted to the Board of Architectural Education and marked, and, according to the marks, students should be accepted or rejected.

"(5) The number of designs to be submitted might remain at four—or be increased to six if desired—and any design executed in its proper order during the three years previous to sending in should be eligible.

"If some such scheme were adopted, the design made within the walls of the Institute would disappear. The original sketch design submitted with each finished design, with the master's initials or signature on it, would be the guarantee that the work was the student's own.

"Instead of sending in such designs as Testimonies of Study before the paper examination, I think a far preferable course would be that they should be submitted *after* a student had passed that examination. Design is the crown of a student's career. A student must possess practical knowledge before he is allowed to practise, and the profession owe it to the public that this safeguard is provided; otherwise men will obtain their knowledge at the expense of the public. Students could, of course, try their 'prentice hand' at design during their early years of training, but let the problems set them be such as they can understand. When they are too difficult the master makes the design, and the student merely has an exercise in draughtsmanship. Another advantage in placing the design last is, that the Testimonies of Study required before the paper examination might consist entirely of measured work. Such work has, I believe, been cut out before the Final now."

Asked how he thought such a scheme would affect provincial students, Professor Simpson said: "Advantageously, I think. There are very few towns of importance in which architectural classes of some sort do not exist, at which students can work, and it would be an additional inducement to the towns not possessing them to start such classes. Moreover, students in the country or in small towns would, to a greater extent than is the case at present, be led to regard a year or two spent at a school in London or some other large centre as an essential part of their architectural training."

"What other defects in the new Institute scheme do you see?"

"The chief blot is the retention of the Preliminary examination unaltered. That has for long been admitted to be insufficient by everyone who has experience of students. Yet it remains as before. The new regulations pile up weight on top and leave the foundations insecure. Of all people, one would have thought architects would have been the last to make such a mistake."

"Do you think that all schools should aim at an ideal?"

"By all means have an ideal, and let it be as high as possible, but—and this is the important thing—let it also be broad; especially at the base."

THE ERECTION OF LIVERPOOL CATHEDRAL.

BY ARTHUR GREEN.

(Concluded from p. 146, No. 890.)

THE Lady Chapel, the first part of the Cathedral scheme completed, is a lofty building, being 58 ft. from the floor to the apex of the vaulting; it is 100 ft. long by 35 ft. 6 in. wide, including the gangways at each side; the width between the inner walls that carry the vaulting shafts being 25 ft. The floor of the Lady Chapel is 13 ft. 7 in. below the floor of the Cathedral. At the west end, the narthex is divided from the Lady Chapel by a wide low arch, which carries the west gallery, the gallery being at the same level as the floor of the Cathedral. An archway on the gallery gives access on the north side to the south aisle of the choir, and on the south side to the upper porch. A spiral staircase, commencing on the same level, leads to the organ and to the walking-way in the choir aisle walls, continuing upward to the floor over the organ. At this point begins the walking-way which crosses the building on the outside at the foot of the great east window, and continues across a bridge to the walking-way round the top of the chapter-house. Above the wide arch of the narthex are two piers, with three arches, carrying the organ floor. The front of the organ gallery, which projects 3 ft. 6 in., is carried on a large English oak beam 26 ft. long, its entire length being beautifully carved into foliage and shields. Above the beam are panels, with a carved capping. A low arcade of six arches on each side of the Lady Chapel carries the triforium gallery.

The piers of the arcade are quite plain, and are without caps; they stand on a moulded base, with vaulting shaft attached. The arches are fully moulded, the moulding dying into the splay of the piers. Behind the piers is a narrow gangway. Above the arches is a deep string, which runs all round the chapel, on which are carved the words from St. John iii., 16, 17: "For God so loved the world," etc. Between the words are sprays of foliage.

The carved string forms the base of the stone screens in the front of the triforium gallery. The screens are 11 ft. high, and are divided into five bays each by mullions, and having tracery heads with carved cusps. Over the tracery is a moulded cornice. Projecting from the cornice are winged figures, three in each bay, some playing on ancient instruments, whilst others are singing. Above the cornice, and completing the screens, is a deep band of cresting, richly carved into lilies, rose, shamrock, and thistle alternately. The windows on the north and south sides of the chapel are of two lights, 2 ft. 11 in. each, the sill being 22 ft. from the floor; the height of the jambs from sill to tracery being 22 ft. There are six windows on the south, and five on the north side. In the apse there are three three-light windows of similar dimensions to the side windows. All the windows are filled with painted glass from the studio of James Powell and Sons, Whitefriars. In the lower panels of the central apse

window is the stem of the Tree of Life the branches of which spread through the whole of the windows on each side of the chapel. The tree is full of life, there being numerous children, birds, and animals indicated amongst the branches. The central window of the apse contains the adoration of the Magi. In the tracery above is the figure of Eve in adoration. The upper panels of the left-hand apse window have three single figures—Hannah, Ruth, and Sarah. In the lower panels of the window is the scene of the Annunciation, the figure of Eve being tempted in the tracery above. In the upper panels of the right-hand window of the apse there are three single figures—St. Elizabeth, "mother of St. John the Baptist," Ann the prophetess, and Mary of Bethany. In the lower panels of the window is the Presentation in the Temple. The tracery contains the figure of Eve as the first Mother. The windows on the north side of the chapel are all single figures, representing historical saints. No. 1 window, counting from the apse, contains Queen Bertha of England and Queen Margaret of Scotland; No. 2 St. Bride of Ireland and St. Noy of Wales; No. 3, St. Helena and St. Hilda; No. 4, St. Bega and St. Werburga; No. 5, St. Frideswide and St. Osburga. In the windows on the south side of the chapel are single figures, which represent Prayer Book saints—No. 6, counting from the apse, St. Anne, Mother of the Virgin Mary, and St. Mary Magdalene; No. 7, St. Perpetua and St. Cecilia; No. 8, St. Agatha and St. Prisca; No. 9, St. Catherine and St. Lucy; No. 10, St. Agnes and St. Faith; No. 11, St. Margaret of Antioch and St. Etheldreda.



DETAIL OF CARVED CRESTING, ETC., IN LADY CHAPEL, LIVERPOOL CATHEDRAL. G. GILBERT SCOTT, ARCHITECT.



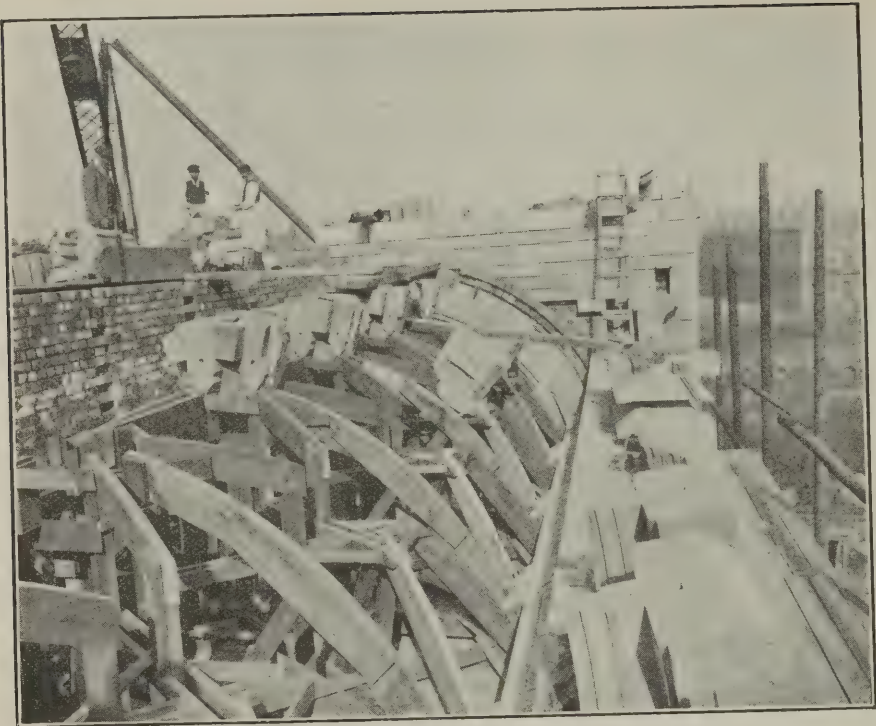
BAY OF SANCTUARY, LADY CHAPEL, LIVERPOOL CATHEDRAL. G. GILBERT SCOTT, ARCHITECT.

On entering the narthex from the porch of the chapel, immediately on the left is the atrium, in which there are three two-light square-headed tracery windows. The glass in these windows was given by the Girls' Friendly Society, and commemorates notable women of modern times, the following portraits being included: Juliana of Norwich, Susanna Wesley, Elizabeth Fry, Josephine Butler, Charlotte Stanley Countess of Derby, Queen Victoria, Angela Burdett-Coutts, Catherine

Gladstone, Christina Rossetti, Elizabeth Barrett Browning, Lady Margaret Beaufort, and Ann Clough. On the stairs from the narthex to the Lady Chapel gallery is a two-light tracery window, the glass of which also is the gift of the Girls' Friendly Society, and contains portraits of the following notable women: Margaret Godolphin, Mother Cecile, Louisa Stewart, Dr. Alice Marvel, Ann Hinderer, Grace Darling, Kitty Wilkinson, Agnes Jones, and Mary

Rogers. The scheme of the glass is good, and fitting for a Lady Chapel, as it comprises Bible women, Prayer Book and historical saints, and modern noble women.

The triptych at the east end of the chapel is of painted and gilded wood, richly canopied. The upper panels represent the Nativity, the lower panels the Baptism of our Lord. The scheme of decoration is in blue and gold. Rich hangings at the sides, also blue and gold,

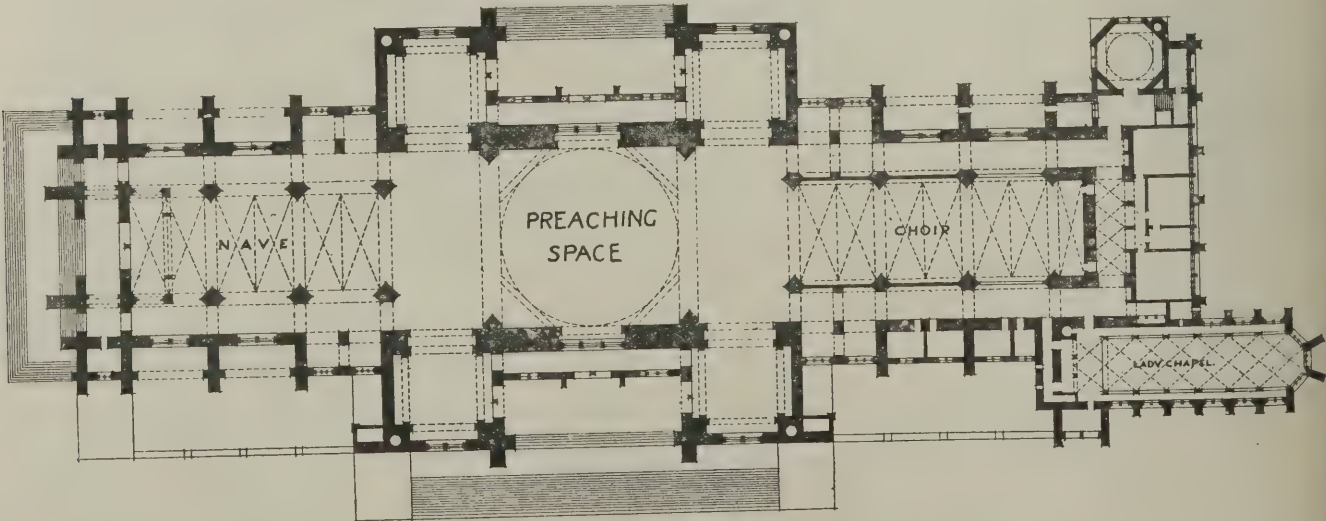


LIVERPOOL CATHEDRAL: AMBULATORY VAULTING.

and the Holy Table, with its beautiful white frontal, give the whole a very striking effect. The ceiling is a barrel vault, springing at a height of 44 ft. from the floor, with transverse and diagonal ribs; carved bosses are placed at each intersection of the ribs. Towards the apex of the vault, a smaller rib is introduced, forming panels, and producing a very rich effect. The curves on the smaller ribs become very interesting where a segment of a circle crosses a segment of a circle. Interest is given to the vault by its being cut for the heads of the windows. At the west end is the organ, a splendid instrument by Willis. The organ case is of oak, beautifully carved, and reaching up to the vaulting. Two angels at each side hold trumpets. At the level of the organ gallery are two large angels, carved in stone, holding shields. On the face of the shields are sprays of lilies. Mr. J. Phillips executed the whole of the wood and

stone carving, with the exception of the triptych, which was done by Messrs. Rattee and Kett, of Cambridge. The floor of the chapel is composed of large slabs of Alpine green and seconds statuary marble, laid in courses with random lengths; across the chapel at each vaulting shaft are panels of inlaid black and white marble. The steps to the altar are in various lengths of black and white marble, alternated. The bishops' and canons' stalls, choir stalls, lectern, faldstool, etc., are of English oak and richly carved. All the doors also are of English oak. The iron-work on the doors is by Bainbridge Reynolds. Over the doorway leading to the lower vestries is a carved crown, with the word "Alleluia." On the jambs are shields and Tudor roses. The chapel is lighted by six gilded pendants, hanging by chains from the vaulting. These were executed by Bainbridge Reynolds, and play a considerable part in the decoration

of the chapel. The entrance to the Lady Chapel is from St. James's Road, through a two-storey porch, the lower porch having a wide arch at the entrance. The ceiling is a barrel, divided into panels by ribs. At the apex are carved bosses, and there is a cresting on each side of the ridge rib. The double doors on the inner wall of the porch are English oak, richly carved. The upper porch, the floor of which is on a level with the chapel gallery, is approached by a flight of stone steps. The entrance is on the west side. A doorway opens on to the chapel gallery. The front of the upper porch is divided by a slender stone pier and two arches. There are four figures with canopies, the two figures on the pier representing Samuel with the lamp, and Timothy with the Bible. On the two buttresses are David with the sling, and the boy with the loaves and fishes. In the gable above is a representation of the Good Shepherd, with boy and girl. The roof of the porch is of English oak, covered with grey stone slates. The roof of the Lady Chapel is of English oak covered with copper. The chapel is heated by hot water, radiators being placed both in the floor and in the triforium gallery. The heating engineers are Messrs. Haden and Sons. Outside, the chapel is rather severe, having a series of lofty buttresses, the space between the buttresses being 11 ft. 3 in., which is entirely filled with the windows. The jambs of the windows are a plain splay, from which the deep mouldings of the arch spring. The buttresses rise out of a deep weathered base. A walking-way with tracery balustrade goes round the chapel, 2 ft. above triforium gallery level, from which access is obtained. The buttresses are tunnelled for a walking-way. Above the windows, and on a level with the floor over the organ, is a corbelled-out walking-way, with balustrade. The tops of the buttresses finish with a weathered gable. On the face of the buttresses are carved shields, and lead water shoots, which connect with the gutter behind the parapet, are provided, for the water to get away in the event of the gutters being blocked. All the rainwater heads and down pipes are of cast lead, the heads being ornamented. The Lady Chapel, which is mainly the gift of the Earle and Langton families, was consecrated by the Archbishop of York on June 29th, 1910.



11 10 9 8 7 6 5 4 3 2 1
SCALE OF FEET.

PLAN OF LIVERPOOL CATHEDRAL.

CORRESPONDENCE.

*The Influence of Competition upon
Design.*

To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL,

SIR.—In the interesting but perhaps somewhat inconclusive paper on "The Influence of Competition upon Design" read by Mr. J. Milton Dyer before the American Institute of Architects at Washington and reported in your issue of February 7th, p. 154, although we are told that in America a Government type of design based upon the use of the Orders is being evolved, the author hardly seems to have come to a definite decision as to what the influence in its widest sense is, or as to whether it is the good or the reverse.

Though we might take his expression of opinion, towards the end of his paper, "that the best method of securing an artistic as well as practical result is by the direct selection of an architect," as a definite condemnation of the existing systems, yet the paragraphs that follow suggest that he has hopes it will have better results in the future, and eventually exert a beneficial effect upon architecture.

Now, the subject is one of such importance to the profession and the welfare of architecture, that I think it merits further discussion; and if you are willing to place your columns at the disposal of your readers for that purpose their views may prove of interest.

If it can be shown that the influence of competitions is harmful to design, then every effort should be made to amend the conditions under which they are held.

But I hold, to the contrary, that their general effects are good, and I cannot concur with Mr. Dyer's remark that competitions do not stand for "training in design."

Restricting the scope of our consideration to affairs in our own country, and granting the author's assumption that the assessors or jury exert great influence upon the designs submitted in competitions, may we not assume, after making due allowance for the personal idiosyncrasies and wide differences of taste among the leaders of our profession, that, inasmuch as assessors are generally drawn from the most talented and cultivated section of the central professional body, open competitions produce a healthy emulation among architects, and tend greatly to raise and unify the standards of design throughout the whole country—leading eventually to the development of something approaching a national style. These results may, I think, be seen in our course of evolution at the present time. A comparison of the designs of the last ten or fifteen years, during which competitions have been numerous, with those of, say, twenty-five or thirty years ago, will prove greatly to the advantage of the former.

The additional facilities for architectural education, which have to some extent contributed to this result, are a direct response to the demands of the many brilliant young men who, seeing the chance of an early recognition of their talents, are being drawn into the profession every year.

Individual genius may suffer at the hands of professional assessors afraid to be the first to approve of innovations, or unduly influenced by the supposed necessity of sacrificing all aesthetic considerations to minor points of planning and

economy of cost, which weigh so heavily and count for so much with the members of the committee by whom the award has to be confirmed.

For the production of genius, however, a high level of general professional achievement, and a widespread culture and appreciative discernment among the public, is generally necessary.

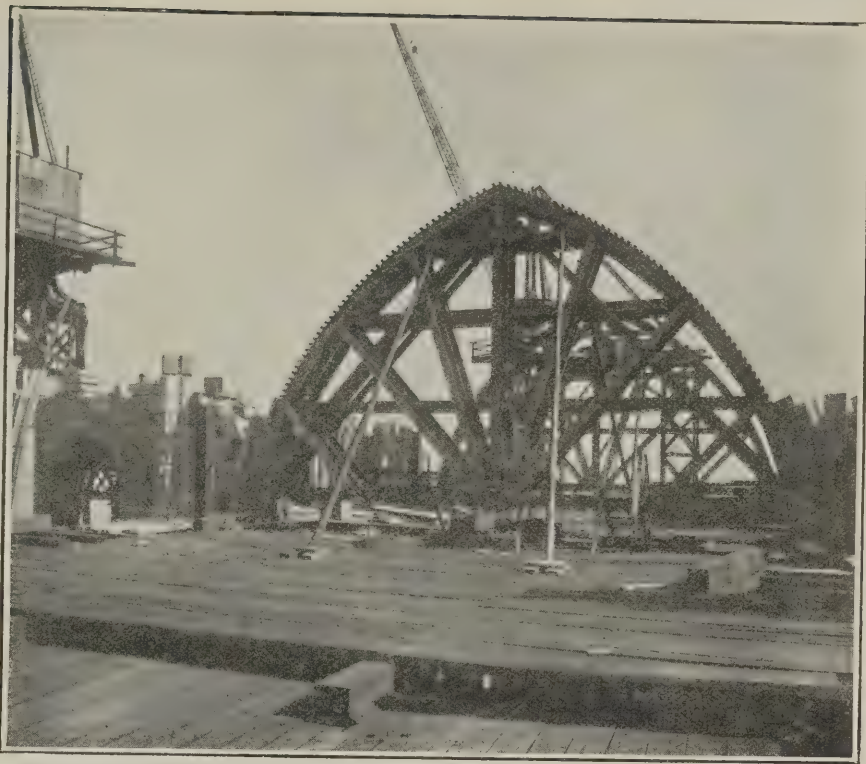
Competitions, by the emulation provoked and publicity given to the subject, do make for the production of both these requirements, and the young man of ability and genius is encouraged to great effort, and given his first chance, so long as his innovations or eccentricities do not fall too far wide of the usual standards of design.

Moreover, the competition system makes for the more complete control of professional affairs by professional men,

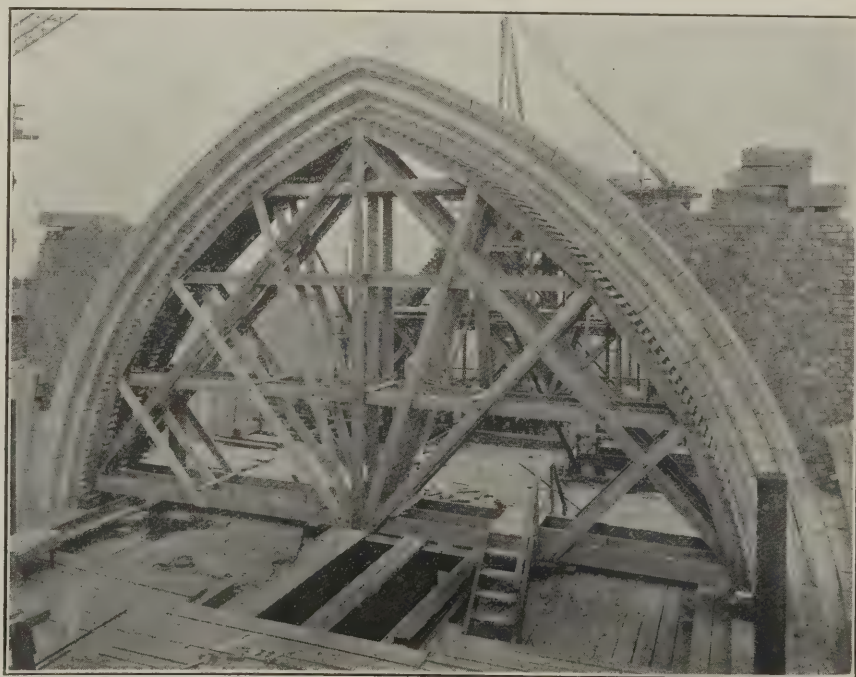
which, in these days, when our public men are so unappreciative of architecture as an art (as witness the famous strictures of a First Commissioner of Works concerning Mr. Shaw's Scotland Yard buildings), is highly desirable; and at the same time it eliminates the possibility of municipal or political jobbery.

Is it not probable that exceptional talent will be as soon, and perhaps more surely, recognised by the professional assessor as under any system of private or State patronage?

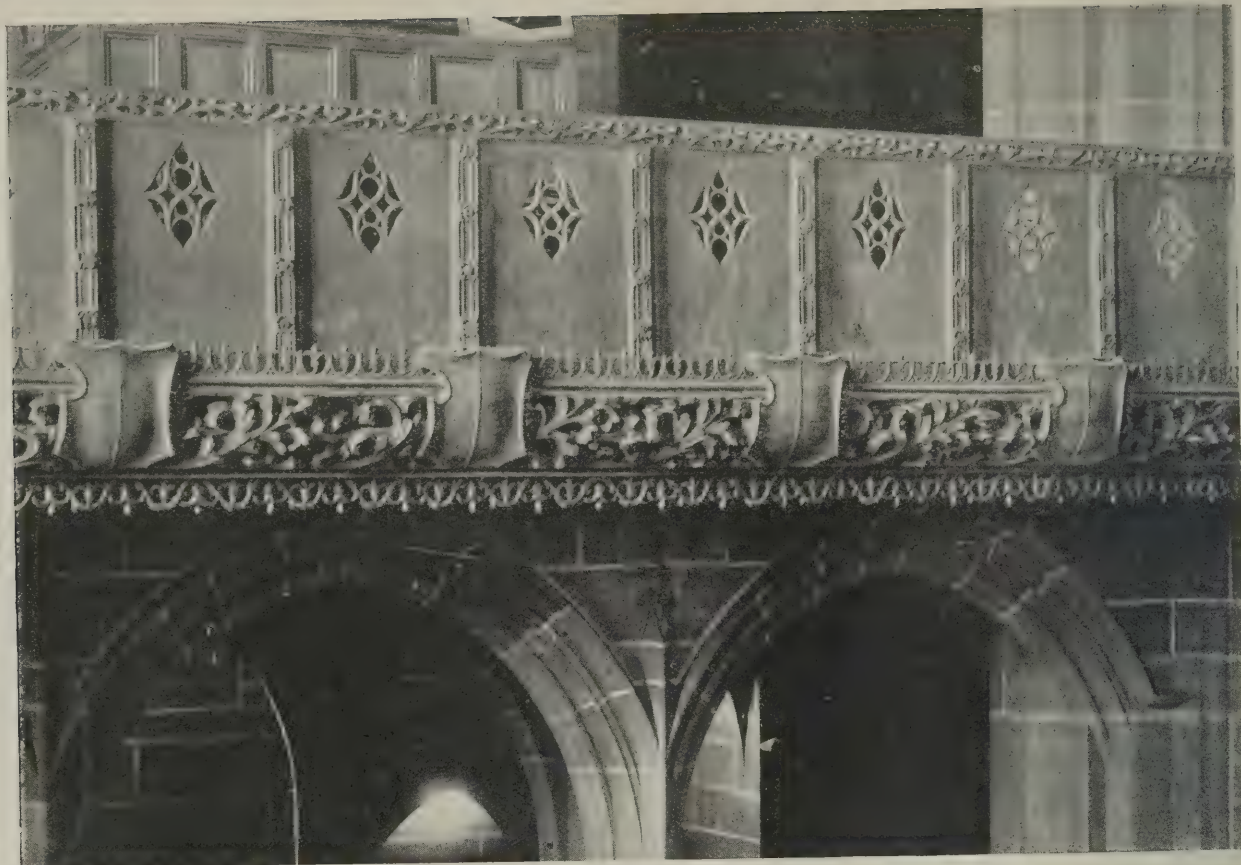
The Achillean heel of the competition system, at first sight, would appear to be found in the fact that the genius, having been given his first chance, cannot develop his individuality to the full, but in competition for all future public work must play down to the limit of the assessor's appreciations and the con-



LIVERPOOL CATHEDRAL: CENTRE TO TRANSVERSE ARCH OVER CHOIR.



LIVERPOOL CATHEDRAL: TRANSVERSE ARCH OVER CHOIR.



DETAIL OF ORGAN GALLERY IN LADY CHAPEL, LIVERPOOL CATHEDRAL.
G. GILBERT SCOTT, ARCHITECT.

ditions of the competition; and that any great iconoclast or innovator—any architectural Wagner—would meet with more opposition from a professional jury than from a private connoisseur. It would seem that here was a case for beneficent and intelligent patronage of an autocrat.

But for every time that this beneficent patronage has been at hand, how often has it been missing! Under the present system, genius has a fair certainty of early support and recognition, with always a free hand in regard to detail. Revolution will be more difficult, and progress will be slower, but perhaps more sure, than under other conditions.

Coming down to the actual influence of competition upon the details of design, it is difficult to believe the use of the order is really the result of the existing system. Is it not that competitions have made necessary a fairly high standard of design, and the order has been found one of the simplest and easiest methods of producing imposing and rich effects in combination with unity and monumental dignity in buildings devoted to multifarious purposes and divided into many departments? One can sympathise deeply with Mr. Dyer's exclamation—"Must we, in competitions, be eternally condemned to the use of the order?" On the score of sincerity alone one would often like to see it eliminated. I for one should like to see architecture freed from the dead hand of tradition. But the principles and details of design are hardly likely to be completely controlled by the competition system; and fundamental changes will come about rather as the results of a great revolution in construction—the introduction of new methods and materials such as are found in the systems of reinforced concrete finding expression

in æsthetic forms that are true to and indicative of those materials and structural necessities.

H. S. FLEMING, A.R.I.B.A., P.A.S.I.
Old Charlton, S.E.

[We have printed Mr. Fleming's interesting letter in full, and are willing to admit further correspondence on so important a subject. The space that we can devote to it, however, being limited, letters must be kept as brief as possible. Otherwise they will stand but a slender chance of insertion.]

A Sheffield Improvement Scheme.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your notice of this scheme you state that the spaces between the skylights in the Lower Market might be rather deficient in light in dull weather.

The skylights marked A, B, C, D on section are of an aggregate width of 180 ft. in a total width of building of 350 ft., which is in excess of the recognised rule as to the proportion of skylight requisite for a picture gallery—viz., half the width of the gallery. The Lower Market also being very lofty (25 ft. floor to ceiling), the spaces, 50 ft. wide, under the solid ceilings, would be amply lighted by the skylights, 40 ft. wide on both sides, admitting rays of light to every part, the only parts dependent upon reflected light being the upper parts near the ceiling, as is also the case with respect to the solid parts of the ceiling of a picture gallery.

EDWD. M. GIBBS.

[The section referred to is the cross section in a pamphlet (presumably obtainable, price 2d., from the offices of the "Sheffield Daily Telegraph") in which the scheme is fully described and illustrated.]

LEGAL.

Falling Brick Injures Foot Passenger.

In the King's Bench Division last week, before Mr. Justice Avery, James Chapman, twenty-four years of age, sued Messrs. John Greenwood, Ltd., contractors, for damages for personal injuries caused by a brick falling upon his head from a building under construction by the defendant firm in St. John's Street Clerkenwell. It was stated that the plaintiff was on his way home to dinner on May 19th last, and while he was passing along St. John's Street a brick fell from the top of No. 423, which was being rebuilt, and struck the plaintiff on the head, causing injuries which necessitated a cessation from work for some time. Plaintiff's case, as disclosed by the evidence, was that the accident caused him to lay up for sixteen weeks, and after that his wages were reduced from 28s. a week to 6s. or 7s. Expenses were set down at £30 16s.—The defendants, who admitted liability and paid £25 into court, contended, however, that there had been no negligence on the part of the defendants' servants, and that the claim was excessive, as the plaintiff had quite recovered from his injuries. The foreman of the work said that every precaution was taken to protect the public passing along the pavement, and that the accident was only attributable to the unaccountable conduct of the brick, which, falling from the top of the house inside the building, passed through two floors, striking the joists in its passage and finally rebounding through one of the windows just above the hoarding and striking the plaintiff on the head.—The jury without leaving the box, found for the plaintiff, assessing the damages at £1,000 plus the doctors' fees, £87 12s. in all.

THE FIREPROOFING OF WHITELEY'S.

A NOTABLE EXAMPLE.

MESSRS. WILLIAM WHITELEY, Ltd., the well-known "universal providers," have had several severe experiences of destruction by fire; consequently, in the great new building which has recently been completed for them from designs by Messrs. John Belcher, R.A., and J. J. Joass, F.R.I.B.A., they decided that everything possible in the way of fire-resisting construction and fire-protection should be provided.

The accompanying illustration of the exterior of the new building (for which we are indebted to Messrs. Mather and Platt, Ltd.) shows the long front to Queen's Road, Bayswater, and the return to Porchester Gardens, the block so far erected representing about one-half of the entire rebuilding scheme, which embraces the older portion of the Queen's Road front and the return, on the north side, to Douglas Place. The new premises in themselves form a very large shop, but when the whole is completed Whiteley's may claim to be called gigantic. Such being the case, it is fortunate that the work should have been placed in capable hands; otherwise we should have to deplore a lost architectural opportunity, and we should have trusted once again on our gaze a trivial and commonplace building. As it is, Messrs. Belcher and Joass have produced, for the public, a very noble façade, while at the same time fulfilling the multitudinous and imperative requirements of a place where shopping is conducted on a very large scale. For the present, however, we are not so much concerned with the architectural features with the fire-resisting construction and equipment of the new premises.

Steelwork.

First it may be stated that the building is of steel-frame type, the total amount of steelwork being nearly 3,000 tons. The stanchions are carried down to cellars, and are enclosed by pumice rock and concrete, this protection averaging a thickness of 4 ins. The whole of the weight is taken by the steel frame, the superimposed granite columns which constitute the dignity of the exterior being only architectural dressings supported by the steel stanchions. The main entrance in Queen's Road, where the columns, arranged in pairs, are built up of solid sections, the lower columns are purely decorative, as those above are not supported by them, but are carried on a deep girder that spans 50 ft. opening here.

The same remark about the weight borne by the steelwork alone applies to the interior, the 14 in. brick walls which divide the new building into seven distinct sections being merely division walls. In this connection it may be claimed that the conditions imposed by the design in the first place have determined the necessity for the form of construction, and though the endeavour to give the frame an architectural expression must, under present conditions, solve itself into expedients that are in conformity with what may be deemed the established architectural canons, still the architect has no option in the matter, and some sort of apology is therefore called for. For example, the necessities of rapid construction, the amount of obstruction in the matter of pillars or piers, and the impossibility

of having steelwork exposed—all enforce a solution which, though not ideal, is nevertheless the best possible in the circumstances. Saving of space is one of the several claims put forward for modern steel-frame construction and similarly for reinforced concrete, in elucidation of which one need only work out the increased area of brick or stone walls in a modern office building in comparison with such construction; it will be found, possibly, that an extra office is thus provided on every floor, and the additional revenue afforded by these means will certainly be a marked return for any increase there may be in the initial cost of construction.

Whiteley's affords a good instance of this saving of space by modern construction, particularly in the vaults that extend under the pavement, these vaults having a roof of reinforced concrete ingeniously cantilevered out from the retaining wall that encloses the site.

Division Walls, Fireproof Doors, and Fire-Resisting Glazing.

The plan of the building comprises, as explained above, seven distinct sections,

in two of which are large rotundas extending up the whole height of the building—five floors—and covered at the top by glazed steel-framed domes. The cubic contents of the sections are in excess of the official requirements, amounting to more than 700,000 cubic ft. in each section, and in order to comply with the regulations the solid brick division walls are 14 ins. thick instead of the 9 ins. required where the cubic contents do not exceed the stipulated capacity. With the enclosing walls of protected steel stanchions, filled in between with windows having steel frames and fire-resisting glazing, and the interior of the building divided by thick brick walls, it became necessary, of course, to see that all openings in those walls were fitted with effective doors. Thus we find that in the main openings from one department to another are steel-framed doors with fire-resisting glazing, centrally fitted, while on either side, leaving an air-space or "fire-check" of 3 ft. between, are rolling steel shutters that can be wound up and down by a handle or closed instantly by a lever, in case of fire.

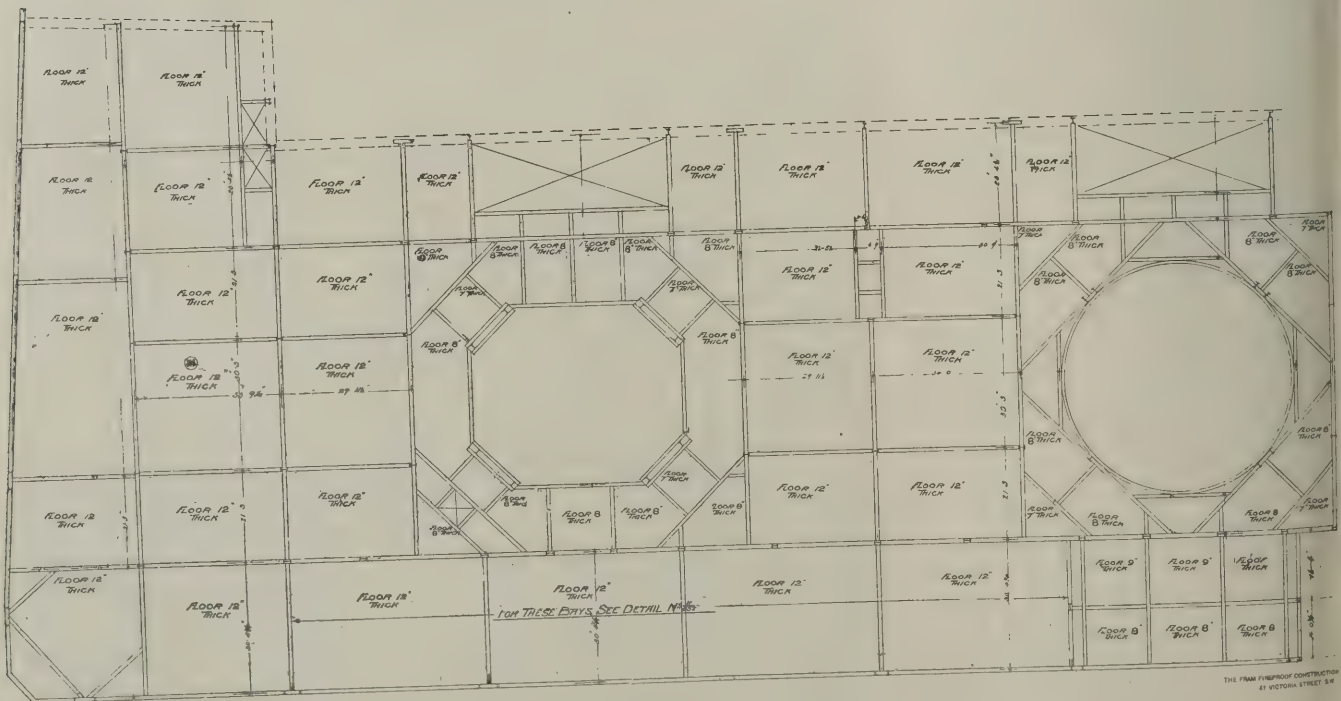
The illustration on page 201 shows one of these rolling shutters about three-parts down, the steel-framed swing doors with fire-resisting glazing being visible below. The shutters have been specially



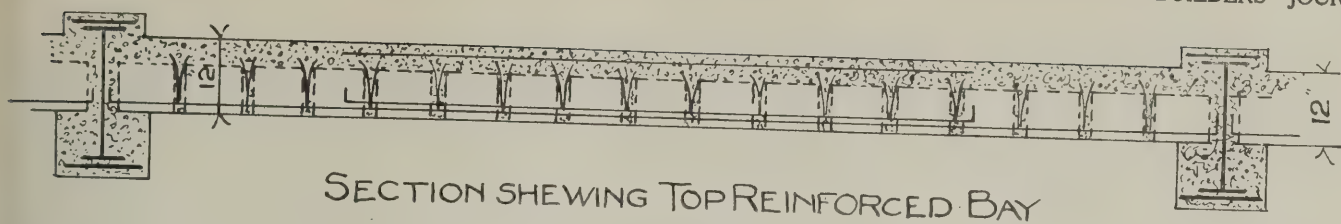
WHITELEY'S NEW PREMISES: INTERIOR OF ROTUNDA.
JOHN BELCHER, R.A., AND J. J. JOASS, F.R.I.B.A., ARCHITECTS.



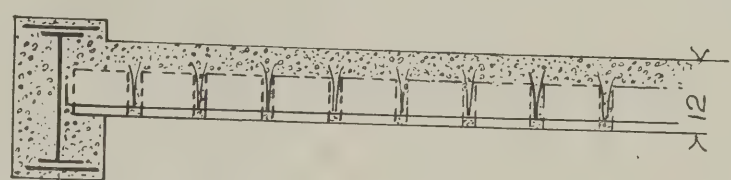
General View showing Façades to Queen's Road and Porchester Gardens.



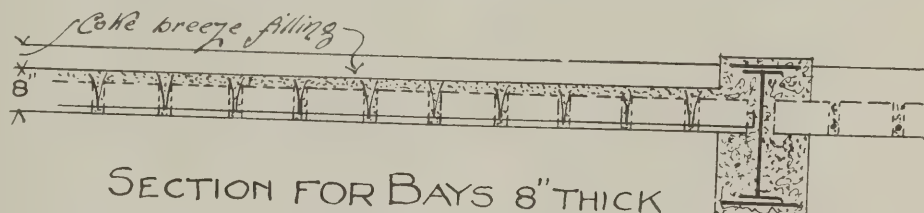
Framing Plan, Second Floor.



SECTION SHEWING TOP REINFORCED BAY



LONGITUDINAL SECTION FOR BAYS 12 THICK



SECTION FOR BAYS 8" THICK
SECTIONS OF TILE FLOOR CONSTRUCTION AT SECOND-FLOOR LEVEL.

designed and constructed for this building, and the openings are of a greater size than has been in general use before, being in all cases 12 ft. wide with a height averaging 10 ft. 6 in. The shutters are constructed of steel slats of No. 20 gauge, so interlocked with one another as to form continuous hinges that act like strengthening ribs across the entire width, rendering the shutters both fire-proof and weather-proof. The sides are fitted with locking shields and with fire stops to prevent the flames from passing round the ends of the shutters. The construction is shown by the accompanying diagram, from which it will be seen that the shutters roll up upon steel tubular drums, which are supported by steel brackets mounted upon concrete templates on the top of brick piers. On the end of the drum shafts is fitted the necessary gearing for raising and lowering the shutters, this gearing being so arranged that both shutters can be operated at the same time, and from either side of the opening; the same mechanism applying to the lever for instantly closing the shutters in the event of an outbreak. Each of the openings in which rolling shutters are fitted has a steel casing that completely surrounds the brick piers and extends through the opening, forming a steel enclosure both for the sides and for the soffit. The casing is packed inside with non-combustible material, thus obviating the necessity of using either wood or plaster lining and moulding; it is, moreover, easily removable in case of necessity, and has therefore many advantages.

The fire-resisting electro-copper glazing throughout the building has been supplied by the British Luxfer Prism Syndicate, Ltd., the steel window screens by the Pittall Manufacturing Co., Ltd., and the rolling shutters by the Wilson Rolling Shutter Co. Subsidiary openings are closed by tin doors (supplied by Messrs. Mather and Platt, Ltd.) on each side of the opening, and having an air-space or "fire-check" of 6 ft. between them. These doors have spring hinges, so as to close automatically.

Floor Construction.

The floors are of hollow clay blocks reinforced with steel rods and built up with concrete, on the system of the Fram Fireproof Construction Co., of London and Manchester. The main bays are very large in area, some being as much as 45 ft. by 30 ft. without intermediate supports, and the floor construction here averages 12 ins. thick, smaller bays being made up to the same thickness in order to preserve a level ceiling. The hollow blocks are built in the floors in several ways, according to the need, sometimes being placed side by side and in other cases alternating with blocks on end, but always with steel rods between their lower ends filled in and over with concrete, resting on T-beams. In the larger bays the reinforcement is double—crossing from side to side—and a very stiff floor is thus obtained.

The accompanying illustration shows the construction. The blocks are carefully moulded and well burnt, and are corrugated to secure cohesion with the concrete. They are used in the lower half of the floor slabs to secure lightness, sound proofness, and greater fire-resistance. The tensional stresses are taken up by the mild steel rods inserted between the blocks, these rods having a sectional area that gives a safety factor of 4 over the maximum stress arising. Shear stresses are also dealt with by the insertion of steel members of sufficient size to take them up. The compressional stresses are taken by the concrete covering, which varies in thickness according to

the spans and loads to be dealt with, and is so arranged that the concrete should never be compressed to a greater maximum load than 600 lb. to the square inch, with the same safety factor as the steel. Altogether the area of floors and roof exceeds five acres, and this extensive construction had to be carried out with the utmost rapidity.

The foregoing covers the fire-resisting construction at the new Whiteley's. The fire-protection may next be dealt with. It includes (1) a sprinkler system, (2) a fire detection and alarm system, (3) a hydrant system, and (4) a system of fire-escape staircases.



WHITELEY'S NEW PREMISES: OPENING FROM ONE DEPARTMENT TO ANOTHER FITTED WITH ROLLING SHUTTERS AND FIRE-RESISTING GLAZED DOORS.

The Sprinkler System.

This is the well-known Grinnell system, which has been arranged by the sole proprietors, Messrs. Mather and Platt, Ltd., though, owing to a strike, the work had to be handed over in an unfinished state to Messrs. H. J. Cash and Co., who completed it. In this system lines of horizontal distributing pipes are laid under the flooring (except in the basement and on the top floor, where they are hung from the ceiling) at intervals of 8 ft. to 12 ft., and are connected with larger vertical rising pipes, supplied from a source that will keep the water in the pipes under constant pressure. The automatic sprinklers are attached to each of the lines of distributing pipes. Should a fire break out in any part of the protected building, the heat at once rises to the ceiling, where the temperature very soon becomes sufficiently high to melt the solder on the link of the sprinkler (which fuses at 155 degrees Fahr.). The elastic valve in it is thus released, and the water is discharged profusely over the fire. The Grinnell sprinkler has a clear $\frac{1}{2}$ in. outlet and a deflector or splash plate, by means of which the stream of water is broken into spray and distributed effectively on the ceiling above as well as on the floor below. At a pressure of only 5 lb. per sq. in. it is claimed that this sprinkler will completely protect 100 super. feet of floor area.

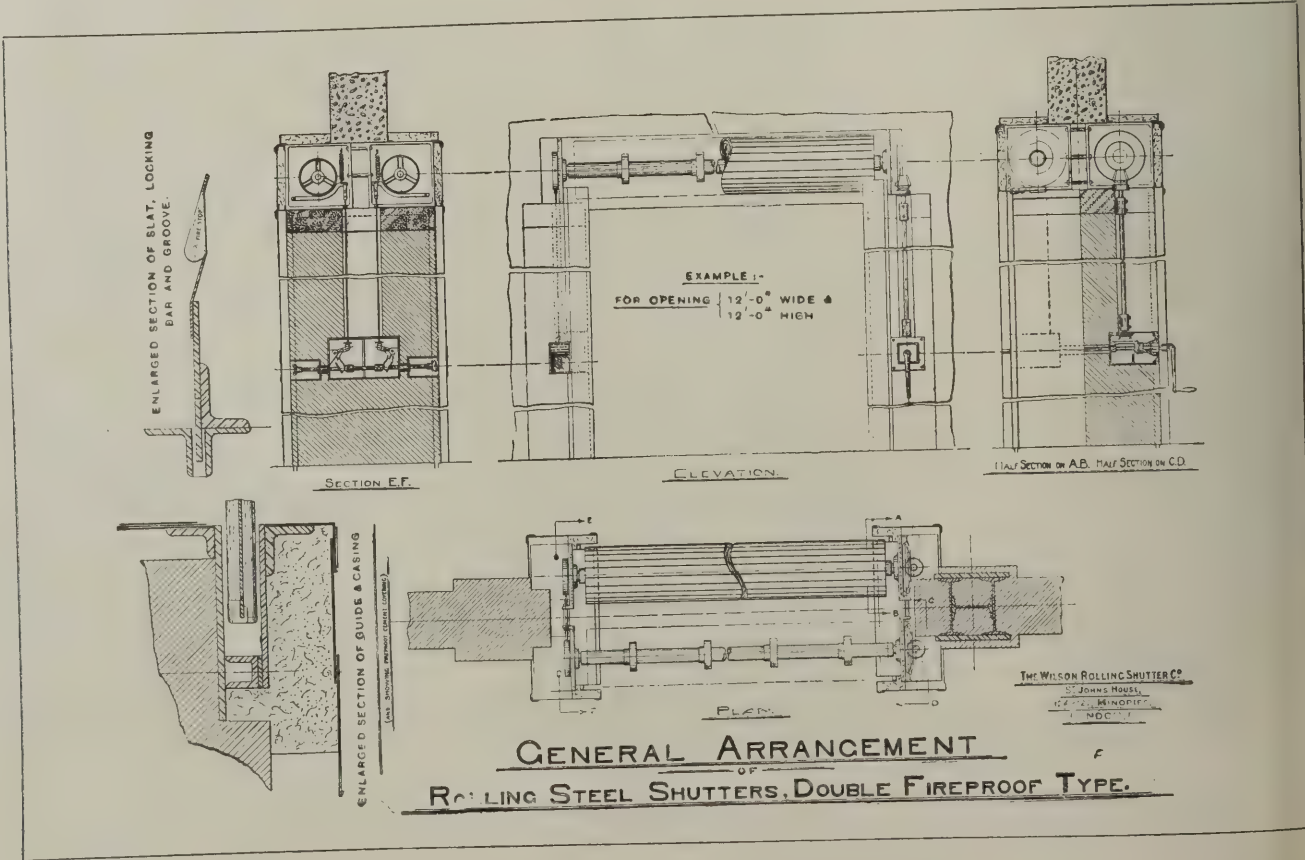
In positions where water in pipes is likely to freeze, the Grinnell dry-pipe system is applied. In this system a patent differential air valve intervenes between the water supplies that are beyond the reach of the frost and the sprinkler pipes in the building. Within the pipes air under moderate pressure keeps the valve closed, thus excluding the water, but the opening of one or more sprinklers in case of fire lets the air out of the sprinkler pipes, and simultaneously the valve is automatically opened by the water, which fills the pipes and is discharged from each unsealed sprinkler.



WHITELEY'S NEW PREMISES: DETAIL VIEW ON TOP FLOOR, SHOWING SPRINKLER AND CAPITALS OF COLUMNS.

At Whiteley's the sprinkler system is divided into four separate installations, three of them being on the wet principle and one on the dry system—in the cold storage, the roofs over the despatch yard, and other outside portions of the building. In order to gain absolute security, the pipes are supplied from four distinct

sources—namely, direct from the wa main, from a large pressure tank in roof, from a hydraulic injector in basement, and from a connection with steam pump in the old buildings: whole control being in one locked room. Each installation is connected to separate alarm gong at the back of



building, and the unsealing of any sprinkler will set the corresponding gong ringing continuously.

The Grinnell sprinkler system was installed in Messrs. Whiteley's older premises, and its effectiveness is testified by the fact that whereas in the four fires which occurred between 1882 and 1887, before the sprinklers were installed, there was an average loss of £105,000 per fire, in the three which have occurred since the system was installed the average loss has been about £250 only. It is to be noted, also, that in the fire that occurred on March 14th, 1910, the sprinklers which then acted so effectively had been

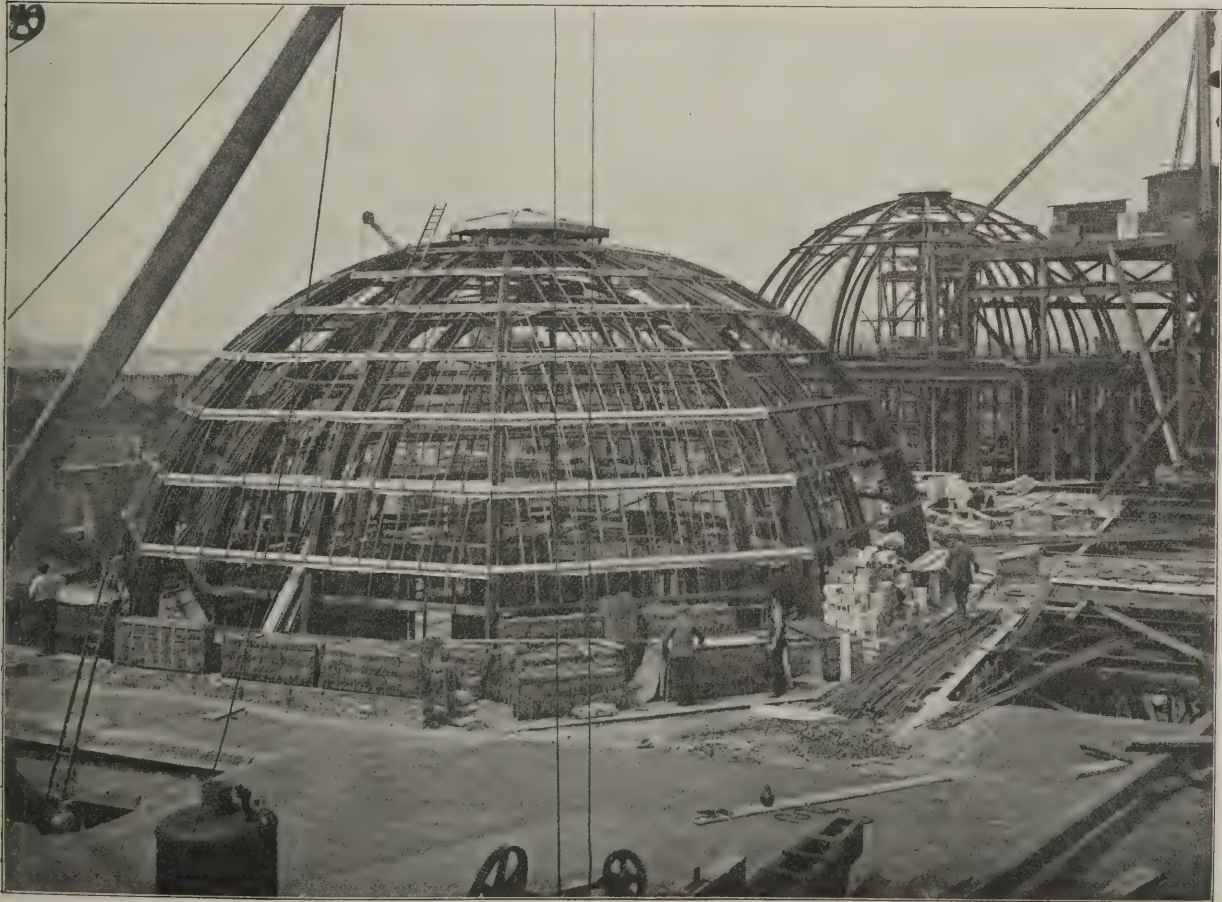
erected for more than twenty-one years. The late Mr. Whiteley was, indeed, the pioneer of sprinklers in the South, his installations having been the first to be erected in London.

The domes over the rotundas (of which two views are here given) are double-glazed with wired glass, and, in addition to the sprinklers around the inside of the drum, there is a collar around the crown served from either side by 2½ in. service pipes, by which means the domes could be flooded with water in case of fire. The arrangement is also useful for cleaning purposes. The domes are 67 ft. in diameter and comprise about 40,000 super-

feet of glazing, the whole of which has been carried out by the British Challenge Glazing Co., Ltd.

The Fire Detection and Alarm System.

In addition to automatic means of fire-extinction, the new Whiteley's has a complete system of fire-detection and alarm. This is the "Aero" system, of The Aero Automatic Fire Alarm, Ltd. It comprises an installation of small-diameter copper pipe, which is run all over the building and is connected with an indication board on the ground floor. In the event of an outbreak of fire, the heat, surging to the ceiling, would cause the air in the pipe system to expand, and, by means of a



WHITELEY'S NEW PREMISES: VIEWS OF DOMES OVER ROTUNDAS IN COURSE OF ERECTION AND AS COMPLETED.

sensitive diaphragm, would not only set alarms ringing at different points in the building itself, but also in the company's offices in Queen Victoria Street; while a pointer on the indication board on the ground floor would show exactly where the fire was; so that there would be the least possible delay and confusion in locating and then extinguishing an outbreak.

The Hydrant System.

As a further protection, and in addition to the sprinklers installed throughout, there is a hydrant system, comprising large rising mains with hydrants and pipe lengths connected ready for use on every floor. There is nothing novel about this system, but it is one further means of doing everything that can be conceived in the way of the prompt extinction of any outbreak of fire that might occur. Messrs. Mather and Platt, Ltd., have installed the hydrant system.

Fire-escape Staircases.

Finally, there are the fire-escape staircases and balconies, supplied by the St. Pancras Ironwork Co. Access to these is gained from every floor, and there is thus provided abundant means of escape in case of fire. In connection with these staircases a rather interesting question arose regarding the obstruction of light, and as the architects were anxious that the windows should not be darkened more than was necessary, the company's patent renewable reinforced concrete treads (which had been originally specified for all the stairs) were replaced by perforated iron treads and risers, made to meet the ordinary requirements of the London County Council, the concrete treads being used in one staircase only where light was not important, and in small portions of the other stairs where the conditions rendered a non-slippery tread specially advisable.

Two interior photographs of the new Whiteley's are here reproduced, in both of which will be noticed the twin columns that are so effective a feature of the rotundas. There are 72 of these. They are of "Siena" scagliola marble enclosing a steel and concrete core, and were executed by Messrs. Bellman, Ivey and Carter, Ltd., who also carried out the enriched capitals and moulded bases, which are bronzed with pure copper by a special process.

The general contractors for the new Whiteley's were Messrs. Holloway Brothers (London), Ltd., the steelwork having been carried out by Messrs. Dorman, Long and Co. (steel-frame structure for external lifts and steelwork for roof over despatch yard by Messrs. Powers and Deane's Ransome's, Ltd.).

The inside staircases, all of steel, were erected by the Crittall Manufacturing Co., Ltd., who also supplied steel doors for certain openings.

Messrs. Henry Hope and Sons, Ltd., supplied bronze swing doors (with fire-resisting glazing) on the ground and first floors.

All the constructional steel and reinforced concrete was designed by, and the engineering work described above was carried out under the direction of, the consulting engineer, Mr. Alexander Drew, of 64, Victoria Street, S.W.

Appointment.

Mr. Herbert Phillips Fletcher, F.R.I.B.A., F.S.J., A.M.I.C.E., of Messrs. Banister Fletcher and Sons, 29, New Bridge Street, Ludgate Circus, E.C., has been elected by the Blackheath Bench of Magistrates as their advisory architect.

COMPETITIONS.

Mural Designs Competition.

The Committee, of which Mr. D. S. MacColl is chairman and Mr. Charles Aitken and Mr. Wilfrid Walter are joint hon. secretaries, formed to promote the practice of mural painting in schools, churches, hospitals, and other public institutions, more especially by young artists and students, a scheme long ago propounded by Mr. Watts, will hold a competitive exhibition of designs at Crosby Hall, Chelsea, in the latter part of May. Several schools and other buildings have already offered wall-spaces for experimental treatment, and designs from the exhibition will be selected to be carried out in these spaces. It is believed that students and young artists will welcome the opportunity of practice in the art of large decorative painting for the sake of the training thus obtained; but the Committee invite subscriptions towards a fund for giving chosen painters a modest remuneration. They will also welcome further offers of wall-spaces in schools and other buildings. The Hon. Treasurer is Mr. John Ross, C.A., at Crosby Hall, Cheyne Walk, Chelsea, and information may be obtained from the hon. secretaries at the same address.

Society of Engineers Status Prize.

The Council of the Society of Engineers (Incorporated) offer two premiums of books or instruments to the value of £8 8s. and £4 4s., as first and second prizes respectively, for approved essays on the subject of "How to improve the Status of Engineers and Engineering, with special reference to Consulting Engineers." The Council reserve the right to withhold either or both the premiums if the essays received are not of the required standard of merit. The competition is open to all, but application for detailed particulars should be made to the Secretary, 17, Victoria Street, Westminster, before entering. The last date for receiving essays is Friday, May 31st, 1912.

Proposed New Church of St. Luke, West Hartlepool.

The limited competition for the above, in which Mr. W. D. Caroe acted as assessor, has resulted in favour of the design submitted by Messrs. Lofting and Cooper, of 44, Bedford Row, W.C.

LIST OF COMPETITIONS OPEN.

FEBRUARY 27TH. WORKMEN'S COTTAGES, THEDWASTRE, SUFFOLK.—Thedwastre R.D.C. invite plans and estimated cost for the erection, in pairs, of workmen's cottages in their district. The advertisement is headed "To builders and contractors." Plans to be sent to Henry E. Wilkes, Clerk to the Council, Stowmarket.

MARCH 15TH. LAYING OUT ESTATE, PRESTATYN.—Designs for laying-out the Prestatyn Estate are invited. Premiums of £50, £30, and £20. Application (with 19s. 6d. deposit, returnable) was to be sent by January 8th to Lord Aberconway and the Trustees of the Prestatyn Estate, 33, Henrietta Street, Strand, W.C. Designs by March 15th. Judge, Mr. H. V. Lanchester, F.R.I.B.A.

MARCH 16TH. PUBLIC OFFICES, HARROW.—Harrow-on-the-Hill Urban District Council invite designs for enlargement and alterations of their public offices, at a cost not to exceed £4,500. Premiums, thirty, twenty, and fifteen guineas. Plan and instructions (£1, returnable) from

Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, Council Offices, Harrow-on-the-Hill. R.I.B.A. will be asked to appoint an assessor.

MARCH 25TH. SCHOOL, COLCHESTER.—The Borough of Colchester Education Committee invite architects practising within the borough to send in Competitive Plans for a School for about 750 children to be erected on a site in Hamilton Road Colchester. Plans must be delivered by 12 o'clock noon on March 25th. Apply to Ernest H. Bultitude, Clerk, Education Offices, 8, East Stockwell Street, Colchester.

MARCH 31ST. NEW PARLIAMENT BUILDINGS, WINNIPEG.—Regulations governing the competition for the new Parliament buildings for the City of Winnipeg may be had from the High Commissioner for Canada, 17, Victoria Street, Westminster. [The date formerly announced for the close of this competition has been extended to March 31st. Mr. Leonard Stokes, P.R.I.B.A., has been appointed assessor.]

APRIL 4TH. COUNCIL OFFICES, PORTLAND.—Portland U.D.C. offer premium of £50 and £10 respectively for first and second designs. Particulars (deposit 10s. 6d., returnable) from R. A. Colenutt, Clerk to the Council, Offices, New Road, Portland.

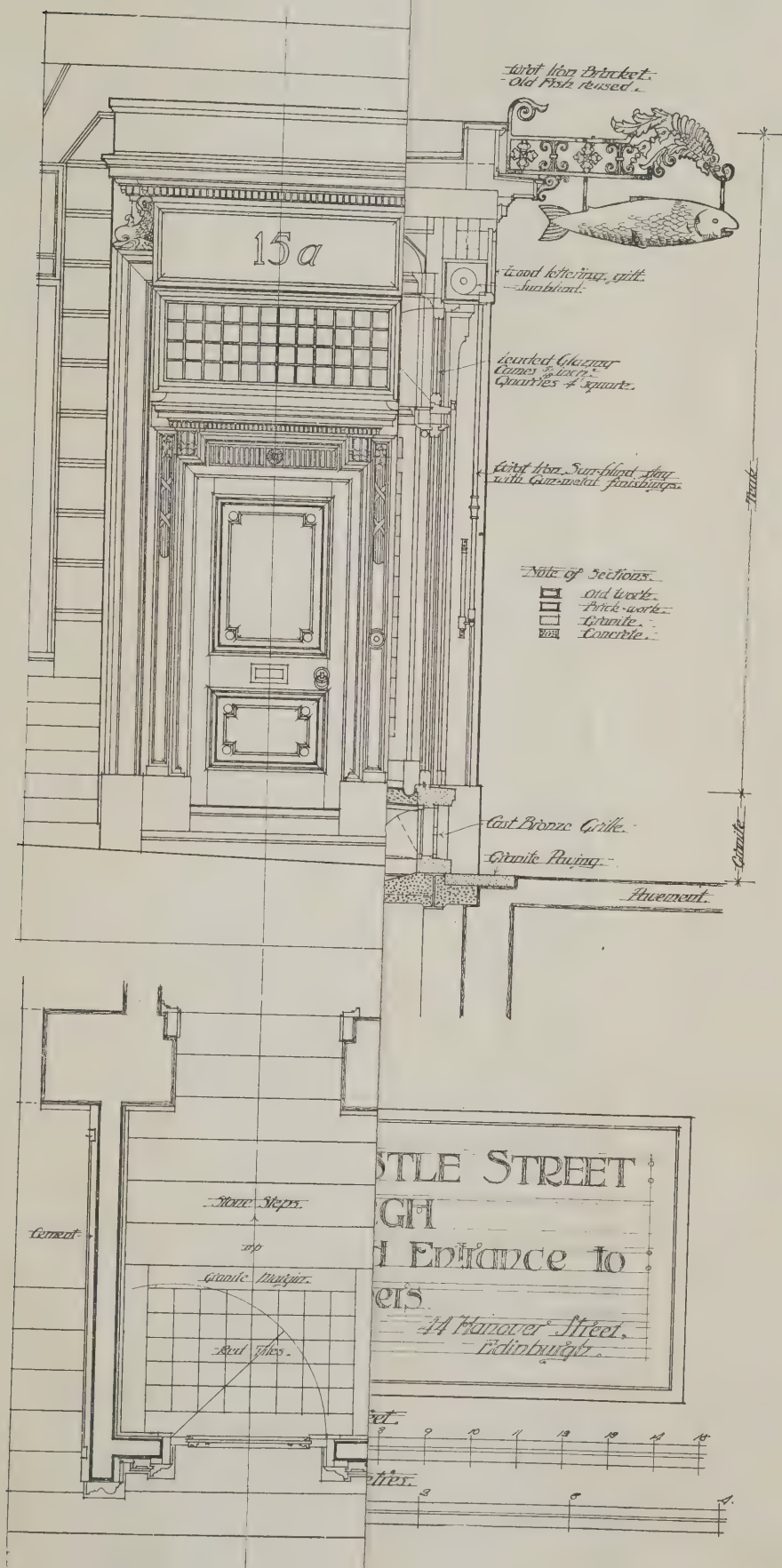
APRIL 20TH. BIRMINGHAM BLUE COAT SCHOOL.—Competition strictly limited to Birmingham architects. In a preliminary competition, three designs will be selected, and the authors will be paid £50 each to develop and redraw the plans to a larger scale, showing further details. In the event of the Governor failing to proceed with the second competition, the authors of the three designs will be paid £25 each. Assessors, Mr. G. H. Hunt, F.R.I.B.A., of London, and Mr. Charles E. Bateman, F.R.I.B.A. hon. consulting archt. to the Governor. Drawings to be delivered by midday of April 20th to Mr. William I. Bolton, Secretary, The Blue Coat School, Birmingham.

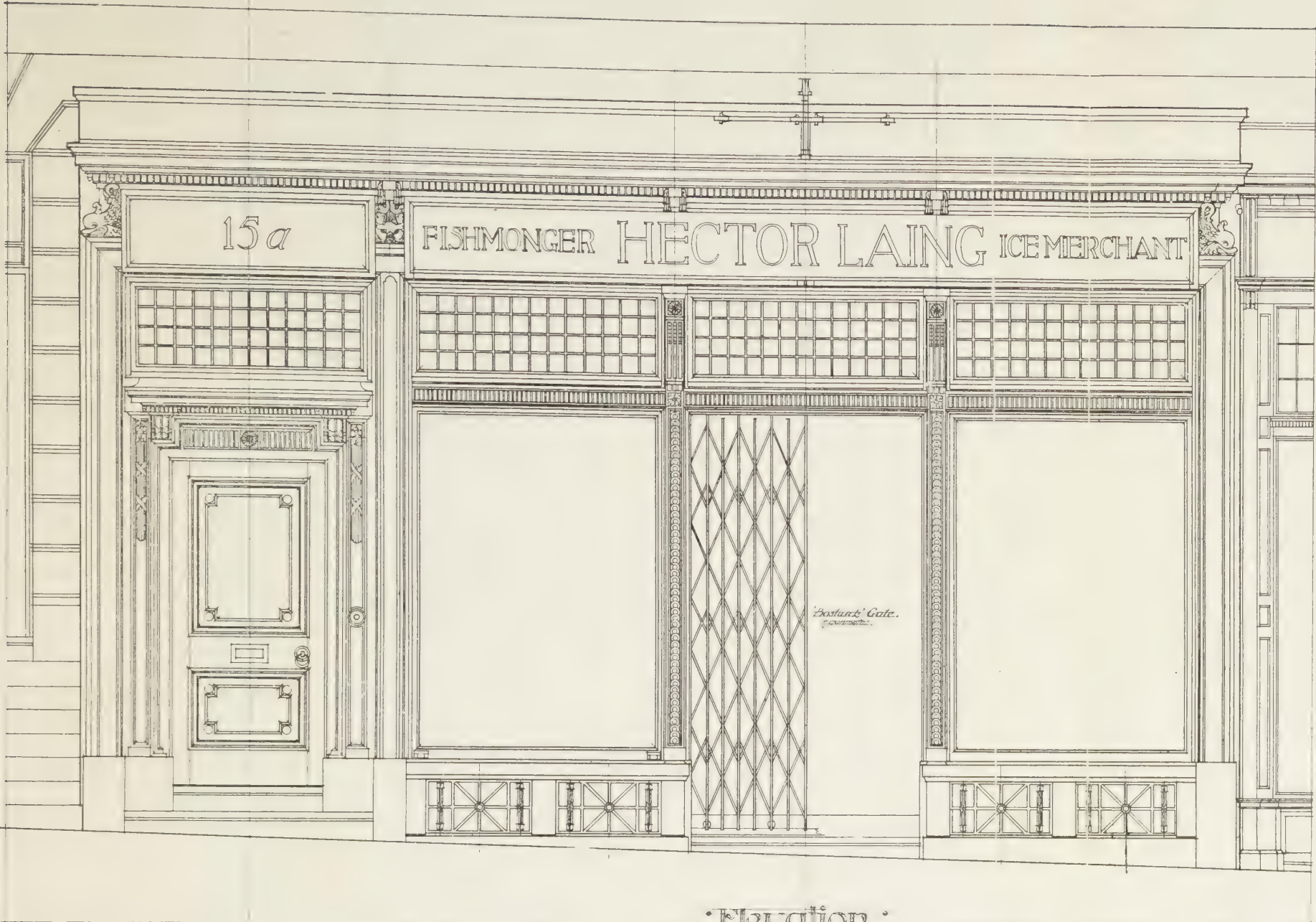
MAY 1ST. PUBLIC BATHS, WOMBWELL, YORKS.—Wombwell U.D.C. invite designs for swimming-baths to be erected at Hough Lane. Premiums, £40, £30, and £20. Stamped and addressed envelope to W. Quest, surveyor to the Council, Town Hall, Wombwell.

JUNE 28TH. TOWN PLANNING, HALE.—Premiums of £50 and £25 are offered for a town-planning scheme.—Address Council Offices, Hale, Cheshire.

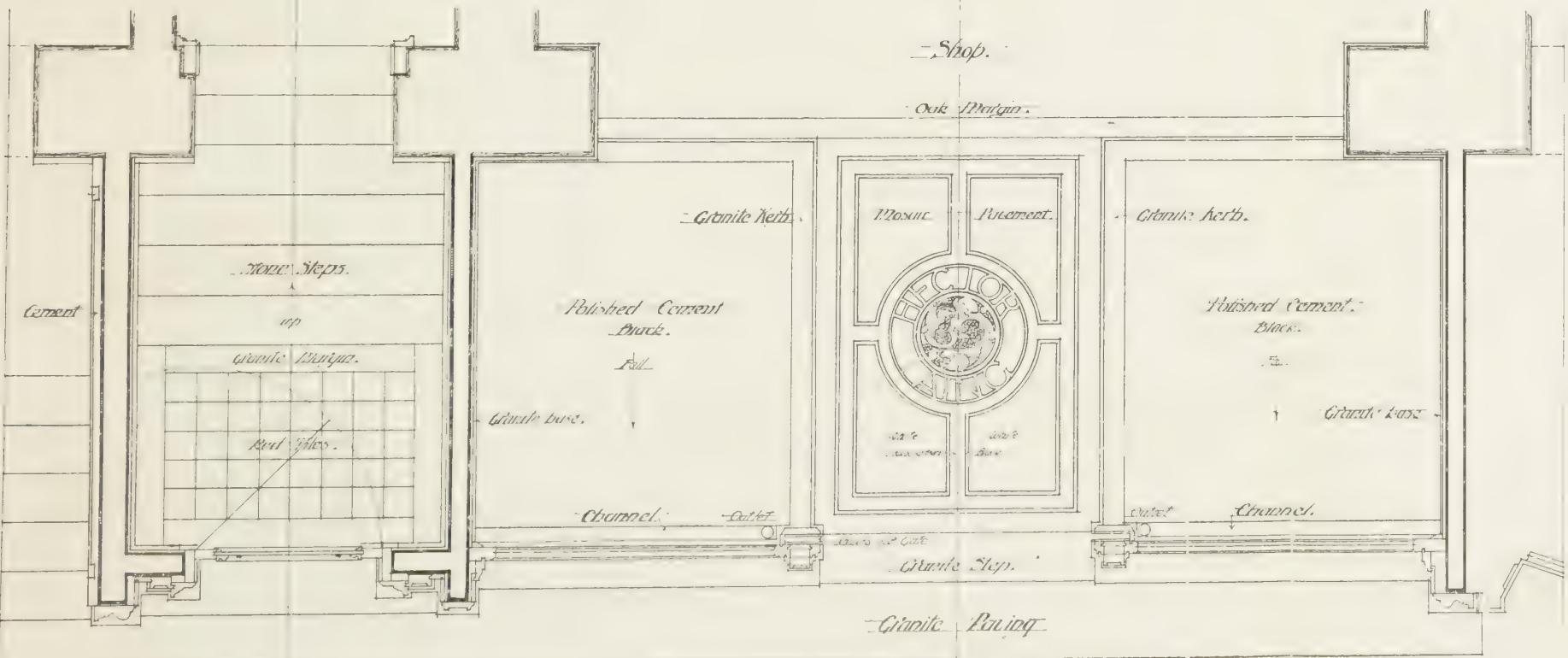
AUGUST 30TH. THE HENRY SAXON SNELL ESSAY.—The Henry Saxon Snell prize of fifty guineas and silver medal of the Royal Sanitary Institute is offered for an essay on "Suggestions for Improvement in the Ventilating, Lighting, Heating, and Water Supply Appliances and Fittings for an Operating Room and its accessory rooms for a General Hospital of 40 Beds (no Students)." Essays (in which two competitors of different profession or crafts may join) to be delivered before 4 p.m., August 30th, to the Secretary Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., from whom full particulars may be obtained.

NO DATE. ELEMENTARY SCHOOL, WARRINGTON.—The County Borough of Warrington Education Committee invite designs for the erection of a public elementary school. Deposit, £1 (returnable). Apply J. Moore Murra, Secretary and Director, Education Office, Sankey Street, Warrington.

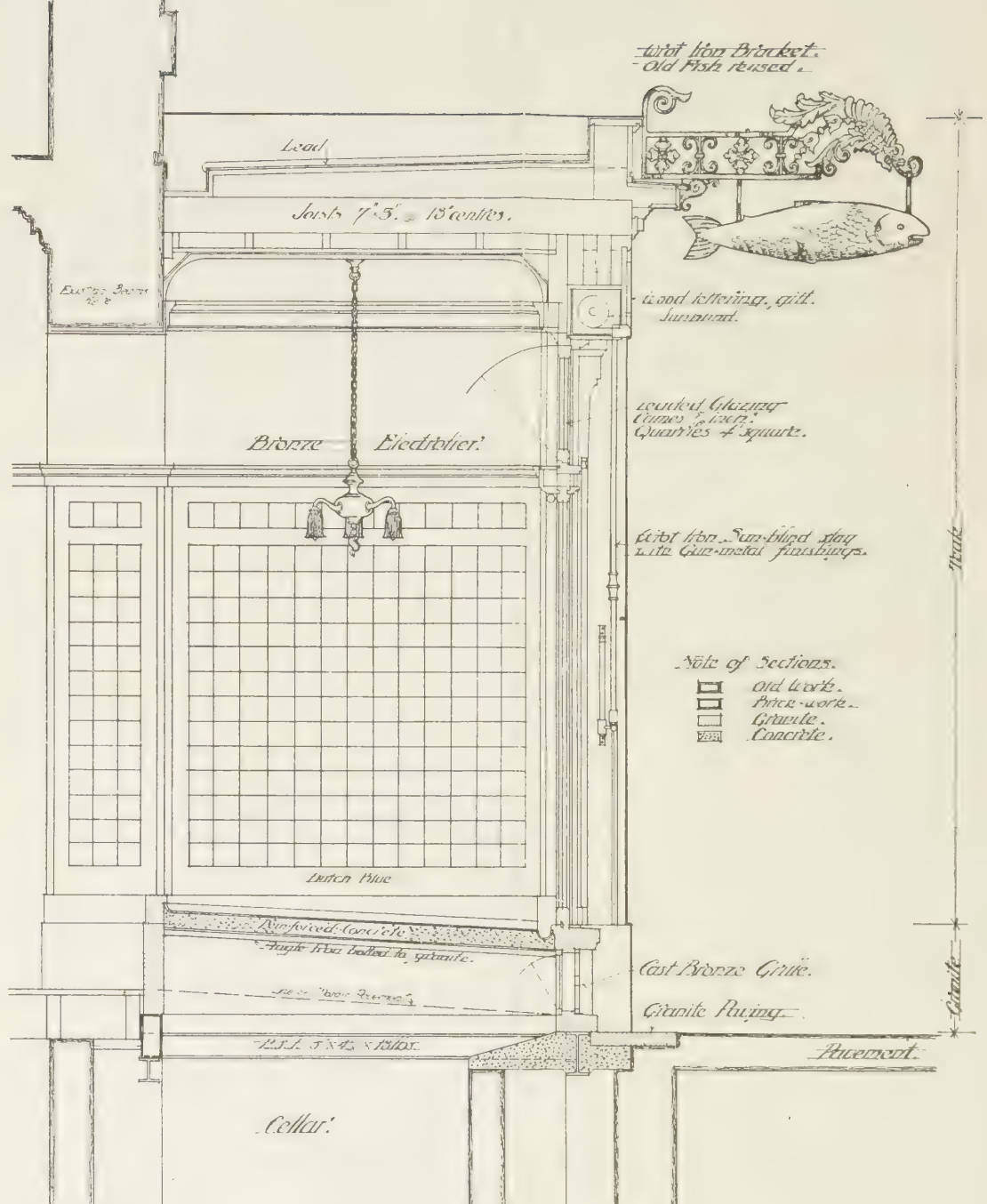




: Elevation :

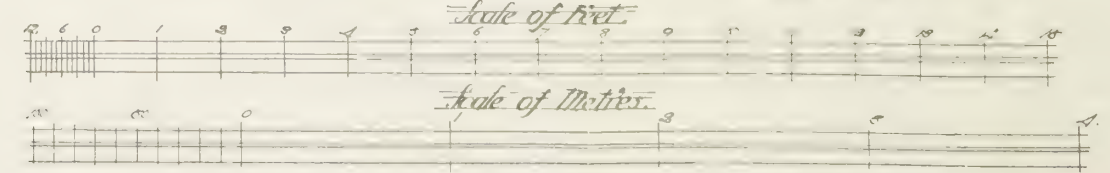


: Plan :



: Section :

Nos 15 AND 15^a CASTLE STREET
EDINBURGH
New Shop Front and Entrance to
Chambers
J. Walker & Co. Ltd. 1911
Edinburgh



A CONVERSATION ON BRIDGES.*

BY PAUL WATERHOUSE, M.A., F.R.I.B.A.

MR. WATERHOUSE'S lecture before the Architectural Association on Monday, February 12th, took the form of a conversation between himself and two imaginary friends—Harper and John Pargeter. After some preliminary discussion, Harper said: "I thought you were going to let us talk about some definitely architectural object." "And pray," said Pargeter, "are not bridges architectural?" "Hardly," said the other. "It is true that bridges occasionally seem to demand and sometimes get a sort of architectural finishing off, such as the Doric columns applied to Waterloo Bridge; but I regard a bridge *per se* as a mere constructional problem, the meeting of a special mechanical need by an economic use of the particular material most suited to the special exigencies of the place and the age. It isn't cut in for a moment," he went on, "Pargeter was preparing to speak, 'I have something to add, for I have thought a good deal about this matter. My consideration of beauty in bridges leads me to the conclusion that beauty in their construction is merely fitness, and that our notions of applying architectural trappings to what is really a mechanical—in other words, an engineering—device or expedient are generally a woeful waste of purely misapplied ingenuity.'"

Harper ceased, and Pargeter looked at him with astonishment. "You are an architect, Harper," he said, "and it amazes me to hear you say such a thing. I am at one with you about architectural trappings: there is no such thing as applied architecture; but your most excellent definition of a bridge is, to my mind, also the most complete definition of architecture that I have ever heard, 'the meeting of a special mechanical need by an economic use of the particular material best suited to the special exigencies of the place and age.'"

No closer expression of the nature of architecture could possibly be devised, yet you boldly say that a process so described is by the nature of the case not architecture, but—as I understand engineering."

Not quite that," said Harper, "but at it this way. You must admit there is such a craft as engineering, and that it is a necessary craft. We know that an architect by himself could not be entrusted unaided with such a problem as a bridge to span the Thames, by admitting an architect's services as desirable for the finishing-off of the structure which the engineer has devised, we simply insult both forms of art, and probably get a result in which the architecture, struggling with the engineering, produces a complicated falsehood which by its very falsity fails to be worthy the name of art." To which Pargeter replied, "My dear Harper, your exaltation of your position only makes it untenable. Engineers are useful people; as you justly observe, their calling is a honourable one and their work is indispensable, but so far for that matter is the work of a host of other persons who do not legitimately find employment in connection with a bridge, but who would, nevertheless, be quite unsuited to art as

the supreme designers of it. All that you can say about the attachment of so-called 'architectural' trimmings or trappings to an engineer-designed bridge is perfectly fair, but the indecency of them is due to the fact that the so-called architect who applies them is, by his very act, proving himself no architect. Whether engineers approve of the fact or not, a fact it still is that an architect if he be anything at all is by virtue of his name an *over-Workman*. A bridge in an important city is obviously and necessarily an important and conspicuous mass of building—as such it is, if I understand architecture at all, a thing to be committed to and produced by an architect. If the problem involved is such that it demands structural knowledge of which no living architect is capable, that is no sufficient reason why the promoters of the bridge should bar all architects from appointment. Appoint the architect, say I, the best you can find, and let him as an over-craftsman have under him, among his many underlings, the best engineer he can get. But somehow or other your questions and my answers have led us to the wrong end of our subject. I wanted to show you how strangely we have been led by familiarity to ignore the miracle of bridges, but we have become plunged into the final and crowning topic, the artistic construction of large bridges in important cities. May I lead the discussion back to the other end of the scale—the primeval bridge?"

"By all means," I said, and Harper said "By all means" also, but he said it as it seemed to me with half a sigh of resignation. Our talk had so far been in Pargeter's little summer-house, built against an angle of his square-walled garden, but as he suggested that we should continue the conversation in the house we both rose to follow him, and Harper, motioning to me to hang back, began murmuring, "I can give you the heads of our friend's discourse beforehand. Aboriginal savage at bank of stream; food supplies or prospective wife viewed on opposite bank; tedium of travelling up stream to find shallows for fording; accidental discovery of fallen tree across stream; application of reasoning faculty; tree felled on purpose in favourable wind; tree too short; selection of rock in mid-stream; device of two trees resting on said rock; dawn of engineering; rudiment of pier; further advance by use of two trunks and transverse sleepers, development of lintel or beam bridge. Conqueror introduces arch; astonishment of savage; progress of arch construction; introduction of iron; arch superseded; return to lintel forms; invention of cantilever. Digression on trusses, and beams again introduced to useful savage in order to trace development of suspension bridge from lowly origin as a mere thong of bullock's hide slung across the stream from tree to tree, up to the elegant structure at Clifton."

Low as Harper spoke, the conclusion of his summary was greeted by a clapping of hands from Pargeter, who, apparently, had heard every word of it. "A very good analysis," he laughed, "of the history of bridges; but I fear I must disappoint you, for I have no inclination to follow the subject on those lines.

Historical development is all very well and very interesting, but I think we shall give ourselves more pleasure by studying the matter in another way.

"Suppose we begin by asking one another, 'What is a bridge?'" "That is easily settled," said Harper. "A bridge is an arched or other structure across a stream or river." "And what do you say," said Pargeter, turning to me. "Harper's definition," I answered, "is a little too narrow; for, to begin with, the bridge needn't be across a stream at all, but might be, and often is, across a road or across a dry chasm." "Yes," said our friend, "and there are also cases where, instead of carrying a road over water, the bridge carries water over a road." I expect that the best definition of a bridge that we can give is, 'a structural device for carrying a road over an obstacle, or an obstacle over a road.' For general purposes that will meet the case, though there would be exceptions even to this, as in the instance, for example, of an aqueduct carrying a canal or a water supply over a river.

"I said" (he continued) "that I did not want to start historically with the savage and the tree trunk, but I must ask you, for the interest of the thing, to imagine yourselves for five minutes to be men whose civilisation has never brought them within reach of the wonder of the arch. You live, let us suppose, by the shore of some mighty river, one of those terrific giants that cannot be bred in an island as small as ours, but need for their nurture long miles of wide continent. Your river comes from hills so remote that you have never seen them, and has rushed through plains so vast that other kings than yours reign over them. Indeed, so great is its force and its severance that the very folk you see lessened by distance on the other bank speak a tongue that you cannot understand.

"One day a man comes among your townsmen and says, 'Give me of your money and I will make it easy for you to walk dryshod in ten minutes from shore to shore.' You laugh at him and suggest that the days of Moses and the Red Sea, of Joshua and Jordan, are not your days. But the man persists, and you ask him how. 'A bridge,' says he. 'A bridge?' you answer, and laugh with greater scorn. You have seen to be sure the arrangement of planks and beams which crosses the streams in your own street, but you know that no such structure could possibly be made to cope with the vast width and the murderous floods of the cold grey monster of which you are so proud and so afraid.

"Then the man speaks again and more madly, as it seems. 'I shall do this thing,' he says, 'not with the lightest and longest materials, but with the shortest and heaviest. Some of you have become used to the wonder of stones piled on stones to make a house: it is on stones that I will cross, and make you cross your river. Not stepping stones, nor a paved ford, but stones that leap from shore to shore, resting here and there on the solid bottom, but bounding from one resting-place to another, flying in curve after curve, but owing all their flight to that very weight which seems to make the deed impossible.'

"Would you believe him? Not you. The thing is a miracle, you say, and miracles do not happen. Your madman makes his bow and goes. You have your laugh out, and a merry laugh it is, for you have kept your money and got rid of

your madman. And after all, you say, it is of no use to go against nature, and the river was placed where it is for good reasons.

"Next year you see a man on the opposite bank. Those few who sometimes venture out on to your river in perilous boats have seen him nearer, and assure you that he is your old friend the madman. You laugh again, realising that the silly citizens of the further shore are likely to be wheedled out of their money in a fool's venture.

"The weeks, the months go by, and at last you see that at the dry end of the summer the man is in very truth at work building a pile of masonry on the bit of shingle that crops up in the centre of the river-bed during August. This is followed by a clever diversion of the current from another part and the building of another heap of mortared stone. Bit by bit through two long seasons, hindered constantly by rising water, and stopped for whole months by the spring's deep floods from the melted snow, the work goes on, till a goodly row of stout mounds of masonry stem the water with their prow-like starlings. You laugh less; but next summer you laugh louder again, for you see timber, undoubted timber, stretching from one pier to the next. Our madman, you cry, has failed at last. His dream of leaping stones is over. He sees that he cannot span his spaces with boulders, and has gone back to the old tree-trunk device, which is good enough for the little stream up street, but will, as we know, be carried away by the first rush of winter water. But your laugh is not long. The logs were carried away, sure enough, but not by storm and stream. They were neatly taken down and stored when they had borne for a while the weight of the first proud bow of hewn rock that was a summer's work of the man with the mad vision. And so, arch by arch, it came. A man like yourselves—only, as you say, madder (as some say wiser)—took of the stones that sink, took of the very sand that the river makes by the boisterous pounding of rocks, took of that human skill which the hungry waters delight to drown, and made from them the conquering arching all but living thing on which one autumn day you celebrated, with fluttering flags and music, with wine and gay clothes, the triumph of human wit over inhuman water."

"Before we get into too exalted a frame of mind on this subject," said Harper, "may I venture to point out that, interesting as bridges are from a structural point of view, they are (even if I admit your claim that they are architectural) necessarily, and for very clear reasons, lower down in the scale of sublimity than most other architectural projects. Their utility, their strenuous economy of material, their publicity—for they are generally for public or common use—and, in fine, their rather commonplace drudgery of service, all serve to mark them off from the monumental aspects of architecture as belonging to a very useful and very necessary, but not in the highest sense artistic, class. In fact, if you are going to make much of bridges you must logically go on to make architectural capital out of roads, for, say what you will, bridges are for the most part very little more than incidents in road-making. And it would puzzle even you, Pargeter, to preach an art sermon on highways."

I realised that Harper, who began these remarks in all seriousness, had ended

by saying a good deal more than he meant, probably for the direct purpose of getting our friend into warmer enthusiasm. He was quite successful; Pargeter was glowing, but with a sudden thought he pulled himself up and said very calmly, as if changing the subject, "Did I ever tell you the story of the Sunday-school teacher from Norwood?"

"I had met the man," said Pargeter, "at Nîmes. We travelled together for a few days, for I found that the little creature was very full of real interest in historical matters; he had quite a poet's heart, and was capable of excitement when other people, better bred, but with blunter appetites, would only show languid appreciation. So I arranged to go with him to the Pont du Gard. He knew that he was to see a Roman aqueduct, and he knew what an aqueduct was, but I wanted him to come upon it by himself. So we had our out-of-door *dejeuner* at the little inn which stands just out of sight of the great arches, and when it was over, I told him to wander slowly up the valley, and I would follow him.

"Judging the time, I set out, and got to the point of view without discovering him. He was nowhere in sight, but he was in sound. At least, that voice was surely his, but the words seemed unnatural to his meek and well-ordered mouth, for they were the words of a swearer. 'Anything wrong?' I shouted, supposing that a sprained ankle was the cause. 'Wrong?' he answered. 'No, I don't think anything is wrong. Why?' 'Oh,' I said, 'you were using pretty strong language when I came up!' He blushed. 'You didn't think I was profane, I hope,' he said. 'I really wasn't, but there is something about this—this monster that made me call out in the strongest and longest words I knew. Of course, I know it is only a water-main, just like the pipes under the road at home in South London, but somehow, coming on it all of a sudden in this country valley among all the flowers and butterflies, and seeing it that size, filling the whole place up like that—sort of drowning the landscape—well, I don't know but what the water-main idea doesn't fairly make it worse. It upset me. Now, if it had been a triumphal arch, or a bit of a basilica or something, I could have taken it quietly, but to find a lonely, out-of-the-way valley simply absorbed by a mass of pure common sense, so huge and so ancient, makes me feel that I must either swear at it as a work of the Devil or say my prayers. Either way I get into the big words.'

"I explained to him that his attitude was a perfectly proper one, that it had an exact counterpart in the feelings of the Queen of Sheba, in whose case the crowning wonder, that made her feel that she had no spirit left in her, was not the temple or the palace, but 'the way by which Solomon went up' from one to the other—doubtless a bridge—and I further assured him that the Romans themselves were so satisfied of the Divine potency of bridges as to call their own high priest by the simple title of chief bridgemaker, a title which to the present day a great part of Christendom gives to its head bishop—Pontifex or Pontiff. On the whole I recommended him, of the two alternatives, to say his prayers, for, whatever moral failings the Romans may have had, they certainly rose above common humanity in the building of bridges, and there is no reason for suggesting that this rising was in the direction of, or even under the direction of, Satan.

"Devil's Bridge, however, is a title which often alights upon a bridge, especially upon such a one as stands inhumanly supreme in a desolate place. Here is one—another of the sketches—from the neighbourhood of Barcelona. Puente del Diablo they call it, and it happens, though you would not think it, to be of Roman origin. The little structure at the far end is the relic of a Roman triumphal arch, and the tall pointed central arch, from which the Roman character has disappeared, is later substitute for two older arches, the central pier having no doubt failed.

"The relation of the whole design to its Roman original seems to me analogous to the Spanish language—a half-Moorish graft upon Latin. The change of the Latin *Pons* to *Puente* is the same frivolous transformation that the bridge has undergone.

"If the Devil built the Roman bridges who built Napoleon's? What do you think of this one from the French side of the Pyrenees? Whether it is a true product of Napoleon I do not know, but it is an absolute poem on all that that word 'Napoleon' means. That leap is rash and yet so assured, that exact fitting of available means to an end, and, to crown it all, that trim bit of Roman assumption in the parapet. Add to that the position in Nature, the rugged, lonely, and defiant spot upon which the hand of a resistless man has been laid with infinite delicacy, yet infinite pertinacity, and you have here a sonnet or an essay clearer than any in mere words."

"Surely," said Harper, interrupting "you are beginning to fly rather high in your rhapsodies! The simple fact probably is that the bridge in question presents, in the absence of steel or chain construction, the most obvious and practical device for the purpose. It is really difficult to understand what simple expedient Napoleon (or the Devil, if that matter) could have adopted."

I ventured to cut in with the suggestion that, after all, the span—as I happened to know—was 150 ft., and that, whether I looked upon the structure as poetry or prose, devilish or divine, it certainly needed a bold mind to entertain the idea of flinging a bridge across such a chasm at all. Humbler men in a less enterprising civilisation would have been content to master the difficulty by taking a circuitous route.

Said Pargeter: "If you are a man of sensibility at all—in the good Jane Austen sense of that word—you can't look upon bridges in any but a sentimental light. Bridges are full of sentiment steeped in it, and unless you are accustomed to go through the whole of seeing nothing but facts and figures, you are compelled to receive something of a message which almost every bridge bears."

"Charing Cross Bridge, for example," said Harper, "and that which extends from Cannon Street Station like a snake from its loathsome lair!"

"There," said Pargeter, "you realise it have me. Let us wipe out the thought of the poor old Thames by the refreshment of a glance at Florence—Florence from the Miniato, one of the fairest prospects of the whole world, and a prospect of which the bridges are the fairest part. I hardly fair" (he went on) "to compare London with Florence, for if there is anything more than another that bridge express it is nationality; so let us set for a minute this sketch of Durham. See the rugged British force of the wall."

composition. The bridge belongs to the Cathedral. Its slope emphasises the height of the crag on which the Cathedral stands, and its irregularity—lack of uniformity between one arch and another—adds immensely to the rough vigour of the scene. A suspension bridge can be, and often is, a lovely thing, but imagine, if you can, a suspension bridge taking the place of Durham's rude causeway, and you will realise that it would spoil the picture absolutely.

"There is great charm about a bridge with something on it—of course, as an alternative to the bridge which is a bridge alone. That is one reason for our bitter regret at the loss of old London Bridge. That and Florence's Ponte Vecchio, and in a different degree Venice's—or shall I say Shakespeare's?—Rialto Bridge, are instances of the instinct to make good financial use of the space which the bridge has won from the water—a picturesque act of commercialism which might well be repeated in modern times. Why we habitually shrink from the chance of making a bridge pay rent for its existence by a row of shops is more than I for one can understand.

"Of bridges with things on them there are several kinds. There is the covered bridge, of which there are two at Lucerne; there is the bridge with a chapel, of which England has an ancient example at Bradford-on-Avon; there is the noble bridge at Pavia with both roof and chapel. Then there is the festive Roman idea of a bridge with one or two triumphal arches. We saw the rudiment of this in the Puerta del Diablo; a better example is the bridge at St. Chamas, of which I have found an old engraving. Even you, Harper, must allow that such a bridge is sentimental, for a triumphal arch has no meaning whatever but a sentimental meaning. It is a costly expression of pride."

"I am not quite so sure of that," said Harper, "for you will probably find that a good many so-called triumphal arches are in reality merely glorified versions of toll-bars or customs-barriers, and those placed upon a bridge may very probably have served both purposes."

I asked Pargeter if there were any sketch of the bridge at Avignon. "Alas! no," he said. "I wish there were. Such a bridge as it must have been! The lean fragment that remains is like a greyhound—a bit of tense, almost muscular, masonry. Its very destruction seems to show how fine in its case was the margin between weight and energy."

"And what have we here—the last in the portfolio? The bridge of Prague. What a change! Here is nationality with vengeance. No English town, no French could have expressed itself in such a guise. Look at its gallery of statues; look at its towers, at their challenging inequality, their fantastic shape! The crucifix that crowns the bridge's centre was paid for, they say, from the fine laid upon a Jew who had reviled the Cross. There was a riot of faith, and faith is a great thing among bridges."

"Depend upon it," he continued, "every bridge has had a bridge-maker, pontifex, and every pontifex is a priest, and every priest has his message."

"Nationality, character, mood, temperament, welcome, defiance, joy, gloom—all these are songs that a bridge can sing. But through them all and with them all it sings by its mere being, by its mere act, the song of the passing, the song of the river crossed, the song of the

coming over, which is an overcoming. And for those that overcome there is a crown."

We two came out from Pargeter's room and said good-bye. I walked home with Harper. We didn't talk for a space. Then I said, "You rather curbed our friend once or twice, but I dare say you did well or meant well in bringing him down to earth. Anyhow, I know he never thinks the worse of you for it."

I said this because I thought he might be feeling remorseful.

His reply rather astonished me. "I don't care," he said, "what Pargeter thinks, but I am sure that in all he said to-day he was perfectly right."

DISCUSSION.

Mr. W. T. Dunn, proposing a vote of thanks, said that as engineers they had expected to hear something in regard to the design of bridges, and something with respect to material. Reference to Charing Cross bridge had naturally raised a smile; but, nevertheless, he would rather like to have Mr. Waterhouse's idea of a bridge that had to carry a railway. The lecture, however, was wholly delightful, and it showed Mr. Waterhouse as an artist and a word-painter.

Mr. H. H. Statham, seconding the vote of thanks, said that the lecture was essentially on the poetry and picturesqueness of bridges. No mention had been made of the tubular bridge over the Menai Straits. This was perfectly simple and effective, and had nothing to offend the taste in any way. Engineers, he knew, preferred bridges to be purely engineering structures without any architectural treatment. He had a great admiration for the Forth Bridge, but if any attempt were made to ornament it, it would become a mere gimcrack. Referring to mediæval bridges, Mr. Statham cited the one at Chester which, being built where the river was cut up by banks, had a natural picturesque appearance. Another was the bridge at Huntingdon, built in the first half of the 14th century. Reference had been made to the way in which bridges were built under Napoleon. The Emperor had always been anxious to have things done in the most solid manner, and of this fact the now double bridge at Passy, over the Seine, was a good illustration. It became necessary, a good many years ago, to carry a railway over this point, and so solid was Napoleon's bridge that a great stone railway viaduct had actually been built along the centre of its roadway. That this had been possible was highly creditable to the ruler and to the builder of the bridge.

Mr. Percy J. Waldram said that no engineer would be able to look at the design of a bridge thenceforward but in a new way. The eternal question between the architect and the engineer was whether the engineer knew enough of architecture and the architect enough of engineering. It was instructive to note that the greatest triumphs of architecture were those closely connected with a knowledge of stresses, strains, and thrusts. If bygone architects did not ignore engineering, neither, surely, should those of the present day. With regard to materials, the use of reinforced concrete in bridgework was open to objection. Reinforced concrete was really weaker than wood, and the necessity for reinforcing large arches pointed to a defect in the design of the arch. If an arch were truly designed it should follow the line of thrust. Masonry under the Romans, he continued, was

splendid until it began to decline and brought about the introduction of the pointed arch. Architecture and engineering, he thought, were not alien to, but complementary of, each other.

Mr. J. J. Burnet said that no artistic thought of a bridge should take away the idea that it was to fulfil a practical purpose; but they had got to read as much poetry into the design as they could. The bridges at Prague and Toledo, he thought, were good examples of the bridge form brought into harmony with the surroundings. The fault of the architect and the engineer was that neither knew enough of the other. The integrity and purpose of a bridge should be simple and open, so as to be understood by everybody.

Mr. Percy Young referred to some of the Thames bridges, particularly Battersea and Putney, which had not anticipated traffic requirements.

Mr. Arthur T. Bolton said that when in Spain he had met an artist who had come across the late Mr. Alfred Waterhouse, when he was making his Continental sketches, for which he expressed great admiration. Waterloo Bridge, said Mr. Bolton, was remarkable for its fine finish at either end and for the introduction of the architectural element. The Doric columns always seemed to be part of the bridge itself. Rennie was directly related to Cockerell, to whom, in his autobiography, he made regretful references that his designs for bridge approaches had not been carried out. Having referred to the Rialto Bridge, Mr. Bolton said it had always been one of Palladio's dreams to erect a bridge with a colonnade stretching along it. He could see no real objection to the introduction of covered bridges in London.

Mr. Philpot said that reinforced concrete construction would not be satisfactory for a bridge to sustain moving loads.

Mr. H. W. FitzSimons mentioned a number of difficulties encountered in modern bridge construction. What, he said, would Parliamentary Committees say nowadays if it were proposed to build bridges with small spans? The requirements usually were that spans should be as large as possible, that there should be the highest possible head-room and the flattest possible gradient; and it was very difficult to bring these points into proper relation. Referring to the Forth Bridge, the speaker said, whether it had twice its metal or not, it was designed by a capable and eminent engineer who knew his work; and in most parts of the structure the steel was stressed up to a very high pitch.

Mr. S. Bylander said in olden times stone was employed because it was the best-known and most suitable material. Steel was now used for a similar reason. He thought it was not impossible to make a steel bridge beautiful. With respect to reinforced concrete, his view was that it was entirely a question of economy. A bridge could be made quite strong enough of concrete alone, but it would require a great thickness of concrete. By the introduction of steel the design was made more economical.

Mr. Gerald Horsley, in putting the vote of thanks, said he hoped that from that meeting would grow up a better understanding between architects and engineers.

Mr. Paul Waterhouse, in reply, suggested that the ideal solution of the problem would be for one individual to combine the qualities of both the archi-

tect and the engineer in himself. The craft of both was so big, however, that it seemed impossible ever to get to the end of it.

With respect to the Forth Bridge, he could only say he thought it an ugly thing, yet one of the most worshipped things in the world.

[Mr. Waterhouse's paper was illustrated by a number of lantern slides made from drawings by the late Mr. Alfred Waterhouse, R.A., the originals, which had not previously been shown in public, being exhibited upon the walls.]

BOOK NOTICES.

Spon's Architects' and Builders' Pocket Price Book and Memoranda.

Many occasions arise when the architect or the builder would be very glad to have on his person, for instant consultation, the means of ascertaining or checking a price, or of referring to authentic memoranda of some of the thousand-and-one items which cannot and need not be carried in the most retentive memory. The books under notice fulfil these requirements very conveniently. Slight in bulk, and having durable but flexible covers with rounded corners, they can be comfortably carried in a pocket of normal dimensions, and in each case the contents are arranged so admirably as to leave but little to be desired in the matter of facility of reference. Systematic tabulation, marginal subject-indication in black type, and a full index, enable the user to find any item at a moment's notice. In the Price Book a diary is usefully included. This book is arranged in the usual order

of trades; but the items in the volume containing the memoranda are in alphabetical sequence. In the latter volume several useful diagrams are included; and the memoranda seem to include every detail that is at all likely to occur in ordinary practice.

"Spon's Architects' and Builders' Price Book and Diary, 1912"; and Spon's Architects' and Builders' Pocket Book, Memoranda Section, 1912. Each, price 2s. 6d. net. London: E. and F. N. Spon, Ltd., 57, Haymarket.

Drainage Work and Sanitary Fittings.

It is not difficult to understand why Mr. William H. Maxwell's handbook on "Drainage Work and Sanitary Fittings" has run into a third edition. Its subject is to a certain extent of general interest, and appeals, moreover, to the members of various professions, to whom a more or less intimate knowledge of sanitary work is essential. This book, besides being cheap, has the merit of succinctness, and should therefore be a boon to the busy man, as it places him in possession of essential data without putting him to the trouble of digesting or tabulating them for himself from out the usual welter of superfluous verbiage. The book contains many illustrations, and should have been provided with an index to the many useful items of information which is incorporated.

Drainage Work and Sanitary Fittings. By William H. Maxwell, A.M.Inst.C.E. Third edition, revised and enlarged. London: The St. Bride's Press, Ltd., 14, Bride Lane, Fleet Street, E.C. Pages xii. + 128, 7½ins. by 5ins., 2s. net.

Theory and Practice in Structural Design.

The chief merit of this book is its clearness of elucidation. Principles are stated in the simplest possible language, and are almost invariably illustrated by means of thoroughly practical examples

of their application. The author is evidently a firm believer in the educational value of an appeal to the eye, and the 370 diagrams are distinguished by exceptional legibility, as well as by extreme neatness of draughtsmanship. Loads, stresses, bending moments, shearing forces, section modulus, and, indeed, all essential considerations pertaining to the principles of safe and efficient design, are explained graphically as well as verbally, and afterwards the various structural members commonly in use are discussed severally and in combination. The book should serve as an excellent introduction to a subject in which a clear grasp of elementary principles is essential to sound practice.

Theory and Practice in Designing. By Henry Adams, M.Inst.C.E., etc. London: Constable and Company, Ltd., 10, Orange Street, Leicester Square, W.C. Pages xviii. + 240, 8½ins. by 5½ins., price 6s. net.

DETAILS, OLD & NEW, XXXVIII.

Shop Front, 15, Castle Street, Edinburgh.

The front illustrated is of teak, duly french-polished. The base is of grey granite, with cast-bronze grilles protecting the stall-board lights. The ingoos to the windows are tiled with white and Dutch-blue tiles, this being the scheme existing throughout the shop.

The architect was Mr. W. J. Walker Todd, Edinburgh; and the contractors were as follows:—joiner work, Mr. Nathaniel Grieve; granite and tile work, Messrs. J. Allen and Sons; wood-carving, Mr. Thomas Good; wrought-iron sign, Mr. Thomas Hadden; bronze grilles, Mr. Charles Henshaw; electric lighting and blinds, Messrs. John Bryden and Sons; all of Edinburgh.



SHOP FRONT AND ENTRANCE TO CHAMBERS IN CASTLE STREET, EDINBURGH.
W. J. WALKER TODD, ARCHITECT.

NEW LIGHT ON VENTILATION.*

BY LEONARD HILL, M.B., F.R.S., AND MARTIN FLACK, M.A., M.B., B.Ch.

Conventional theories with respect to what may be termed the natural philosophy of ventilation are, to some extent assailed by the authors of this paper, whose conclusions, whether or not they are accepted, are based on painstaking investigation, and are therefore specially worthy of the close and earnest attention of all to whom the subject is of practical as well as of vital interest.

THE good effects which result from efficient ventilation and open-air treatment are generally supposed to be due to the chemical purity of the air. They are due really to the movement, coolness, and relative humidity of the air, and to the ceaseless variation of these qualities.

A "Great Illusion."

The ventilating engineer has hitherto followed a great illusion in thinking that the main object to be attained is chemical purity of the air. The heating engineer has sought after an equally great illusion in striving to give us a uniform summer temperature. The ventilating and heating engineers primarily should aim at giving us air which is cool, of proper relative humidity, and which moves so as to vary the cutaneous state of the body. Our comfort and discomfort in crowded rooms and shut-up places depends, not on the chemical purity of the air, but, to a minor degree, on the influence of the smell of the air on the olfactory sense, and, to a vast degree, on the influence of the temperature, relative humidity, and the variations of these qualities of the air, which act on the real field of cutaneous sensibility.

"Chemical Purity" Discounted.

It is needless to point out that our sense of well-being depends to a very great degree on the comfortable condition of our skin, and yet the ventilating and heating engineers have paid little attention to this. While asserting that the chemical purity is of no account, we make no proviso that the air is only altered by the presence of human beings, and is either rendered poisonous by the escape of coal gas or other noxious trade product, or deoxygenated by the oxidative processes of the soil, as it is in mines. We are speaking of the discomfort and ill-health caused by the deficient ventilation, or bad methods of heating, dwelling-houses, schools, factories, theatres, chapels, &c.

The chemical purity of the air can be considered from three points of view, the concentration of CO_2 , the concentration of O_2 , the supposed presence of organic poisons exhaled in the breath.

Owing to the fact that a percentage of O_2 is not legally permissible in factories which exceeds a very few parts per thousand, it is commonly supposed that any lack of excess of CO_2 acts as a poison.

Of Fundamental Importance.

The truth of the matter is quite otherwise; for, whatever the percentage of O_2 in the atmosphere may be, that in pulmonary air is kept constant at about 5 per cent. of an atmosphere by the action of the respiratory centre. It is the concentration of CO_2 which rules the respiratory centre, and to such purpose to keep the concentration both in the lungs and in the blood uniformly about the same. This fact, which was first fully established by Dr. John Haldane, is of fundamental importance.

Extracts from a paper read before the Royal Society of Arts, February 7th.

It is impossible that any excess of CO_2 should enter into our bodies when we breathe the air of the worst-ventilated room in which the percentage of CO_2 assuredly does not rise about 0.5 per cent., or at the outside 1 per cent. The only result from breathing such an excess of CO_2 is a slight and unnoticeable increase in the ventilation of the lungs. The increased ventilation is exactly adjusted so as to keep the concentration of CO_2 in the lungs of the normal 5 per cent. of an atmosphere. The very same thing happens when we take gentle exercise, and produce more CO_2 in our bodies; the pulmonary ventilation is then slightly increased, and thus the CO_2 concentration in the blood and lungs is kept at the same uniform level. At each breath we rebreathe into our lungs the air in the nose and large air-tubes (the dead space air), and about one-third of the air which is inhaled into the lungs is "dead space" air. Thus, no man breathes in pure outside air into his lungs, but air contaminated perhaps by one-third, or (on deep breathing) by one-tenth with expired air. When a child goes to sleep with its head partly buried under the bed-clothes, and in a cradle with the air confined by curtains, he rebreathes the expired air to a still greater extent, and so with all animals that snuggle together for warmth's sake. Not only the newborn babe sleeping against its mother's breast, but pigs in a sty, young rabbits, rats and mice clustered together in their nests, young chicks under the brooding hen, all alike breathe a far higher percentage than that allowed in our factories by the officials of the Home Office. To rebreathe one's own breath is a natural and inevitable performance, and to breathe some of the air exhaled by another is the common lot of men who, like animals, have to crowd together and husband their heat in fighting the inclemency of the temperate and Arctic zones. By a series of observations made on rats confined in cages with small ill-ventilated sleeping chambers, we have found that the temperature and humidity of the air—not the carbonic acid and oxygen concentration of the air—determines whether the animals stay inside the sleeping-room or come outside. When the air is cold, they like to stay inside, even when the carbonic acid rises to 4 per cent. or 5 per cent. of an atmosphere. When the sleeping chamber is made too hot and moist they come outside.

 CO_2 of "No Account."

In breweries the men who tend the fermentation vats work for long hours in concentrations of CO_2 of 0.5 to 1.5 per cent. Such men are no less healthy and long-lived than those engaged in other processes of the brewing trade. In the Albion Brewery we analysed on three different days the air of the room where the carbonic acid gas generated in the vats is compressed and bottled as liquid carbonic acid. We found 0.4 per cent. to over 1 per cent. of carbonic acid in the atmosphere of that room. The men engaged therein worked twelve-hour

shifts, having their meals in the room. They had followed this employment for eighteen years, and without detriment to their health. It is only when we come to the higher concentrations of CO_2 , such as 3 per cent. to 4 per cent. of an atmosphere, that the respiration is increased so that it is noticeable to the individual himself, and such percentages, of course, diminish the power to do work; for the excess of CO_2 produced by the work adds its effect to the excess in the air, and the limit of panting is soon reached. Thus the power to work is checked. Divers who work in diving dresses, and men who work in compressed air caissons, constantly work in concentrations of CO_2 higher than 1 per cent. of an atmosphere, and so long as the CO_2 is kept below 2 per cent. to 3 per cent. of an atmosphere, they are capable of carrying out efficient work.

It results, then, from what we have said, that concentrations of CO_2 , such as occur in the most crowded and worst-ventilated rooms, are of no account. Forced to admit this fact, the hygienist has fallen back on the hypothesis that organic chemical poisons are exhaled in the breath, and that the percentage of CO_2 is a valuable guide as to the concentration of these. It is necessary, he says, to keep the CO_2 below 0.1 per thousand, so that the organic poisons may not collect to a harmful extent.

The Question of Oxygen.

Before we turn to the discussion concerning the supposed existence of these organic chemical poisons, we will deal with the question of oxygen. The oxygen in the worst-ventilated schoolroom, chapel, or theatre, is never lessened by more than 1 per cent. of an atmosphere. The ventilation through chink and cranny, chimney, door, and window, and the porous brick wall, suffices to prevent a greater diminution of the oxygen concentration. Now, in all the noted health resorts of the Swiss mountains, such as St. Moritz, the concentration of oxygen is lessened considerably more than this. On the high plateaux of the Andes there are great cities: Potosi, with 100,000 inhabitants, is at 4,165 metres (barometric pressure about 450 mm. Hg.); railways and mines have been built even at altitudes of 14,000 to 15,000 ft. Owing to the nature of the chemical combination of oxygen with hæmoglobin, man can adjust himself to very great variations in oxygen concentration. At Potosi girls dance half the night, and toreadors display their skill in the bull-ring. We have watched our students, shut in an air-tight chamber, until they came to breathe air containing only about 16 per cent. of oxygen and $3\frac{1}{2}$ per cent. of carbonic acid, and seen their puzzled look when they found they were unable to light a match and smoke a cigarette. There was then too low a percentage of oxygen to support combustion, but of this they were quite unaware. All the evidence goes to show that it is only when oxygen is lowered below a pressure of 14 per cent. to 15 per cent. of an atmosphere that signs of oxygen want arise. A diminution of 1 per cent. of an atmosphere has not the slightest effect on our health or comfort.

Exhaled Breath.

We must now discuss the evidence for the existence of organic chemical poison in the exhaled breath. The evil smell of crowded rooms is accepted by most as unequivocal evidence of the existence of such. This smell, however, is only sensed by, and excites disgust in, one who comes to it from the outside air. He who

is inside and helps to make the "fugg" is both wholly unaware of, and unaffected by, it. Fluegge points out, with justice, that while we naturally avoid any smell that excites disgust and puts us off our appetite, yet the offensive quality of the smell does not prove its poisonous nature. For the smell of the trade or food of one man may be horrible and loathsome to another not used to such. The stench of glue-works, fried-fish shops, soap and bone manure works, middens, sewers, become as nothing to those engaged in such, and the lives of the workers are in no wise shortened by the stench they endure. The nose ceases to respond to the uniformity of the impulse, and the stench clearly does not betoken in any of these cases the existence of a chemical organic poison. On descending into a sewer, after the first ten minutes, the nose ceases to smell the stench; the air therein is usually found to be far freer from bacteria than the air in a schoolroom or tenement.

If we turn to foodstuffs, we recognise that the smell of alcohol and of Stilton or Camembert cheese is horrible to a child or dog, while the smell of putrid fish—the meal of the Siberian native—excites no less disgust in an epicure, who welcomes the cheese. Among the hardiest and healthiest of men are the North Sea fishermen, who sleep in the cabins of trawlers reeking with fish and oil, and for the sake of warmth shut themselves up until the lamp may go out from want of oxygen. The stench of such surroundings may effectually put the sensitive, untrained brain-worker off his appetite, but the robust health of the fisherman proves that this effect is nervous in origin, and not due to a chemical organic poison in the air. The supposed existence of organic chemical poison in the expired air is based upon experiments of Brown-Sequard and d'Arsonval. They injected into guinea-pigs and rabbits either the condensation water obtained from the breath, or water which they used several times over to wash out the trachea of dogs. The water was injected subcutaneously and in large amounts, and produced in their hands signs of illness, collapse, and death.

Fallacious Experiments.

These experiments have been repeated by many others, and with negative results by those whose methods of work demand most respect—Dastre and Loye, Van Hofmann, Wellenhof, Lehmann and Jessen, Haldane and Smith, Weir Mitchell and Borgey, etc. A few confirmatory results have been obtained by methods of experiments which are truly absurd in their conception. One to two cubic centimetres of condensation water (obtained by breathing through a cooled flask) have been injected into a mouse weighing 13 grams or so. This is equivalent to injecting five litres of water into a man weighing 65 kilos. Who would not be made ill by the injection of about nine pints of cold water beneath his skin? It has been shown that injections of pure water alone in doses of over one cubic centimetre may make a mouse ill. Such experiments are ridiculous, and deserve not a moment's attention.

After referring to various experiments which had been assumed to show that the breath of man was injurious to certain quadrupeds, the authors said that they doubted the validity of such conclusions.

The question before us is—Do men breathe out a substance poisonous to man? If there were anything in the claims

of the American authors, we should expect to find rats which dwell in the same confined cage and breathe each other's breath sensitive to the injection of a trace of each other's protein. We are informed, by those who study the phenomena of anaphylaxis, that no such sensitivity can be shown.

After studying the literature on this subject we are convinced that there is no positive evidence which demonstrates the poisonous nature of the condensation water obtained from the breath. We go further, and say there is at present no trustworthy evidence of the existence of any such poison in the exhaled air.

The Brown-Sequard and other experiments having been discussed, the comment was made that "It has been proved conclusively that no harm results so long as a sufficient air current is maintained to keep the carbonic acid below a poisonous amount. The animal in the last cage dies when the CO_2 reaches 10 to 12 per cent. If the CO_2 is kept down the animal in the last cage puts on weight and thrives as well as the animal in the first cage."

Temperature and Humidity.

The authors went on to say: Benedict has shown that a man can live many days in a closed chamber in comfort without damage to his health, having not the slightest cognisance of any defect in ventilation, when the ventilation is so reduced that the carbonic acid accumulates in the chamber up to 1 per cent.—that is to say, so long as the air in the chamber is kept cool and dry. We have enclosed eight students in a small chamber holding about three cubic metres of air and kept them therein until the CO_2 reached 3 per cent. to 4 per cent., and the oxygen had fallen to 17 or 16 per cent. The wet-bulb temperature rose meanwhile to about 85°F ., the dry-bulb a degree or two higher. The discomfort was very great, but this was relieved to an astonishing extent by putting on electric fans placed in the roof, whirling the air in the chamber, and so cooling the bodies of the students.

In a crowded room the air confined between the bodies and clothes of the people is almost warmed up to body temperature and saturated with moisture, so that cooling of the body by radiation, convection by evaporation, becomes almost impossible. This leads to sweating, wetness and flushing of the skin, and a rise of skin temperature. The blood is sent to the skin and stagnates there instead of passing in ample volume through the brain and viscera. Hence arise the feelings of discomfort and fatigue. The fans in our chamber whirled away the blanket of stationary wet air round their bodies, and brought to the students the somewhat cooler and drier air in the rest of the chamber, and so relieved the heat stagnation from which they suffered. The relief became far greater when we allowed cold water to circulate through a radiator placed in the chamber, and so cooled the air of the chamber about 10°F .

Ventilation cannot get rid of the source of a smell, while it may easily distribute the evil smell through a house. As Pettenkofer says, if there is a dunghill in a room, it must be removed. It is no good trying to blow away the smell. Houses and people and their clothes and bodies must be made clean, and latrines and kitchens placed on the top of houses, or outside them, and on the windward side. Catarrhal infections are spread by the expulsion of droplets of saliva when speaking, coughing, or sneezing. During

quiet respiration the exhaled breath is practically sterile, for the wet mucous surfaces of the respiratory tract catch all the inhaled bacteria, and no "droplets" are exhaled. Can we lessen the "droplet" infection by ventilation? Fluegge concludes, from the results of his admirably contrived experiments, that we cannot. He says a current sufficient to drive out such droplets cannot be borne by the inhabitants of the room. A moderate ventilation current tends to keep the droplets suspended in the air. In a still room they soon fall to the ground and, clinging to floor and furniture, may be wiped up next morning and removed by the housemaid. We cannot hope to prevent infection in crowded railway carriages, theatres, chapels, schools, etc. The epidemics of common colds that sweep through the community show this only too well. . . . Immunity depends on the quality and flow of the blood, the supply of immunising substances in the tissue lymph, the activity of the ciliated epithelium and phagocytes which form a second line of defence against bacteria. The state of all these defensive mechanisms of the respiratory membranes are modified by the temperature and relative humidity of the air. Exposure to over-heated dry air dries up not only the skin but the membranes of the nose and throat, and so lessens immunity.

Exposure to over-heated moist air brings the blood into the skin, lessens the circulation through the viscera, and deprives us of the stimulating effect of cold on the cutaneous nerves, decreases the evaporation from the respiratory tract, diminishes the muscular activity, and so the amount of oxygen breathed in and food eaten, and thus altogether lowers the plane of our existence. Hence arise diminished health and strength, and increased susceptibility to catarrh. Those who habitually expose themselves to cold rarely take cold.

Virtues of the Open Fire.

We have now dealt with the general principles which ought to control the practice of the heating and ventilating engineer. The old English methods of open fire and open window have very much to recommend them. By the open fire air is kept moving and cool air is brought in; the heating is by radiation and uniformity of the conditions of temperature in the room is prevented. On the other hand, the impulsion of hot air into a room is the most objectionable of all the systems employed. A cool air and radiant heat are the ideal; the hot-air system gives us neither. In cold weather the heated air becomes excessively dry. The vigour and health of children in America have been seriously undermined by the impulsion of hot "desert air" into the schools.

The lecturers then demonstrated the use of the Ozonair Company's apparatus for generating and diffusing ozone.

Ozone as a Deodoriser.

Ozone, they remarked, is a most powerful deodoriser. It takes away a disagreeable smells. Whether it destroys them or prevents the nose smelling them is of little importance. The physical effect is the same—the disguise due to the evil smell disappears. Ozone should be present in the air for continuous breathing in concentrations not greater than that scarcely perceptible to the smell. Very weak concentrations, barely perceptible to the smell, have no ill effect but destroy the effect of unpleasant smell and give a certain tang or quality to stuffy air which relieves its monotony and un-

formity. It is in this respect that ozone has its use. The air in many buildings is made to smell by the heating appliance used. The addition of ozone takes away the smell and relieves the monotony of such air, and, as the Ozonair apparatus can, by the turning of a switch, be put in or out of use, the uniformity of the atmospheric conditions can thus be frequently changed. The ozone no doubt exerts its effect both on the cutaneous and respiratory nerves. There is no evidence that ozone reaches the blood, or that it has any other influence on the body. The effect which ozone in weak concentrations has on the olfactory nerves, and those of the skin and respiratory tract, is the justification for its use in ventilation.

An interesting discussion which followed the paper was published, together with the paper *in extenso*, in the issue of the "Journal of the Royal Society of Arts" for February 9th.

INDUSTRIAL EDUCATION AND EFFICIENCY.

The General Electric Company's Annual Dinner.

The annual dinners of the General Electric Company, Ltd., have attained more than a trade significance. The occasion partakes to a great extent of a representative function of the British electrical industry and Empire trade. At these gatherings there is usually an assemblage of some five hundred guests, embracing not only the best brains of the electrical profession, but also men of science, eminent statesmen, etc. The debates, which have always been a feature of these entertainments, possess an interest and an educational value everywhere recognised. This year's dinner, which was held at the Trocadero Restaurant, was no exception to the rule. Amongst nearly six hundred guests were: Sir George Houston Reid (High Commissioner for Australia), Sir Edward Holden, Bart., the Hon. Sir William Hall-Jones (High Commissioner for New Zealand), Sir William Bull, M.P., Lieut.-General Sir J. Bevan Edwards, Colonel Crompton, the Hon. Sir John McCall (Agent-General for Tasmania), the Hon. J. G. Jenkins (late Premier of South Australia), the Hon. Sir John Taverner (Agent-General for Victoria), Professor John Perry, the Hon. W. Pember Reeves (Director of the London School of Economics), Mr. Gordon Selfridge, Mr. A. J. Walter, K.C., Mr. Roger Wallace, K.C., Sir E. Grant-Burls, and Mr. Walter Reynolds, L.C.C.

Mr. H. Hirst, who presided, in proposing the toast of the evening, "Engineering Science and Industry," paid a warm tribute to the memory of the late Mr. G. Byng, chairman of the company, who died last year. Mr. Hirst referred to the great difficulty experienced by engineering firms in recruiting the best men to fill the important positions they have available. He said that engineers and all business houses were hampered by the fact that a business career was regarded at the universities as beneath the dignity of men of superior education and social standing. The majority of them rushed into the overcrowded professions of law, medicine, and journalism, and only turned to business when everything else failed. He considered it was important, not only for industrial houses, but for the welfare of the Empire, that university and public school men should

be encouraged to adopt a business career. Every civilised country was striving for industrial expansion to increase its capital and provide profitable employment for its people. All the nations of the world had formed themselves into so many industrial armies to compete for the industrial prizes the world had still to offer. He appealed to the powers that be at the ancient universities and seats of learning to see that Britain's industrial army of the future should be led by the best brains and best blood of the country. A university training was exactly the training required for modern business. Business to-day was no longer a mere matter of buying cheap and selling dear. The mere huckster was to-day out of place in a business concern. Business had gripped all the facilities science could place at its command, and the man at the head of it needed brains, grit, and culture in as high a degree as was demanded by any other walk of life. The world was rapidly changing, and the greatness of a country was no longer solely bound up with the names of great soldiers, great sailors, or great statesmen. When one spoke of the greatness of modern Germany, one's thoughts immediately turned to Krupp, Rathenau, Ballin, Koppel, and Auer. The greatness of the United States could not be properly defined without immediate reference to Morgan, Carnegie, Rockefeller, Westinghouse, Edison, Harriman, and other geniuses of industry and finance. In the same way England's greatness was inseparably bound up with the names of such men as Armstrong, Vickers, Harland and Wolff. The men who really counted to-day were those who, having built up great industries, found employment for hundreds and thousands of their fellow men, and thus added to the wealth of the nation and its fame all over the world.

Professor John Perry, who responded to the toast, said that the subject referred to by the chairman had occupied his thoughts for a considerable time. He urged, above all things, as the basis of scientific or commercial training, the cultivation in youth of the love of reading. He did not care whether a boy began with tales of Dick Turpin and pirates. Once the love of reading was implanted, it would grow until in the end the boy educated himself. He held a brief for the average boy.

Sir Edward H. Holden, Bart., who also responded to the toast, suggested that engineering firms should offer prizes to lads in their employment to encourage them to enter for and pass examinations at evening classes or technical schools.

Mr. Arthur J. Walter, K.C., considered that the suggestion raised by the chairman was one of extreme importance. He was a governor of two public schools, and he considered that the teaching staff was underpaid. The scholarship system, which trained for the best but not for the average intellect, was also largely responsible for the trouble.

Mr. E. G. Byng (vice-chairman of the General Electric Company, Ltd.), who proposed "The Parliaments of Empire," asked, what has the House of Commons done for industry during recent years? Industry had sacrificed many of her leading men to politics, and it was now time that the Commons reciprocated in a proper manner. He would like to see each Agent-General of our Overseas Dominions become an ex-officio member of the House of Lords, and recommended

the idea to His Majesty's Government as a means for instituting a truly Imperial Parliament.

Sir William Bull and Sir John Taverner responded.

Mr. M. J. Railing (director of the General Electric Co., Ltd.) proposed "Success to Imperial Trade." He referred to the fact that we often hear complaints as to lack of employment; but was not the remedy for this evil in our own hands? That England should foster her overseas markets was the keynote of his argument. "Let us extend our trade across the sea to our dominions." He looked forward to the day when the Empire would be controlled by one common Patent Law, when there shall be one common system of coinage and of weights and measures, and when there shall be a broader standardisation of educational principles. The presence of so many eminent statesmen and business men from all parts of the Empire testified to the keen interest they took in the development of trade with our dominions, and he hoped that our statesmen at home would endeavour to study likewise the requirements of our dominions abroad, as only by so doing could we hope to further increase and develop Imperial trade.

Subsequent speakers were Mr. Ellis T. Powell, Lieut.-General Sir J. Bevan Edwards, and Sir George Houston Reid.

Sir George Houston Reid (High Commissioner of the Commonwealth Government) said his own impression was that the children of England had never yet had half a chance. If the British Empire was to maintain its position, the children of the United Kingdom would not only have to be the equals of their ancestors, but would have to reach a point of efficiency beyond them. After all, trade and industry was nothing more nor less than a state of war: not war pushed to the extremity of bloodshed and loss of life, but war of skill with skill, contrivance with contrivance, management with management, finance with finance; and if all the battleships and all the British army were disbanded to-morrow, the problems of Empire would not be solved, but only begun. There was, however, one thing that all could do without waiting for Acts of Parliament—give a real preference to his own country. He looked forward to the time when all British manufactures would bear an imperial brand. "Made in Germany" was the best advertisement Germany ever got. It made people think there was something specially good about the brand of that article and that it was the real original thing. He would have liked to see all British-made goods marked "Made in the British Empire."

A Large Contract for Sewage Plant.

Messrs. Mather and Platt, Ltd., have just been instructed to proceed with a large contract for the Accrington and Church Outfall Sewerage Board, which comprised 24 of their pipe-arm type of revolving distributors, each 62 ft. diameter, complete with all appurtenances, as well as a sewage pump, screening mechanism, motors to drive the machines, and also the lighting work. Messrs. Mather and Platt, Ltd., are in a favourable position to undertake such contracts, as they are makers not only of spreaders, but also of pumps and electrical machinery, etc.

SOCIETIES AND INSTITUTIONS.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

A general meeting of this society was held on February 8th, the President, Mr. Sydney D. Kitson, in the chair, when Mr. E. Caldwell Spruce read a paper on "The Present-day Sculpture in France." The lecture was illustrated by many slides of modern works from the schools in Paris, Rodin's work being chiefly in evidence. In speaking of the realistic and emotional types so popular at the present time, Mr. Spruce expressed the opinion that such works, representing repulsive or disgusting subjects, should not be encouraged, as they violate in every way the mission of art. The lecture was concluded by a few comparative remarks on French and English sculpture and the respective attitudes of the French and English public towards the art.

SOCIETY OF ARCHITECTS.

The Fourth Ordinary Meeting of the Society of Architects for the Session 1911-12 was held at 28, Bedford Square, W.C., on February 8th, Mr. Percy B. Tubbs, F.R.I.B.A. (Vice-President), taking the chair in the unavoidable absence of the President.

Five nominations for Membership and fifteen for Studentship were announced.

The ballot was then taken, and the following candidates were declared to be duly elected for membership:—C. Chart, F.S.I., Croydon; W. G. Couldrey, Paignton; J. A. Dartnall, Leytonstone; J. P. Firth, Wakefield; W. H. G. Hubbard, Luton; R. Medcalf, Liverpool; T. B. Medcalf, Liverpool; G. Newton, Bournemouth; J. Thompson, Alderley Edge; L. S. Youngman, Bournemouth. For studentship:—J. S. Clutterbuck, Battersea Rise, S.W.; H. C. Low, Wimborne; H. Rhodes, Gorton; H. W. Sheffield, Earl's Barton; D. M. Wilson, Horsforth.

Mr. E. C. P. Monson, F.R.I.B.A., F.S.I. (vice-president), then read a paper on "The Housing of the Working Classes."

GUILD OF ARCHITECTS' ASSISTANTS.

In the annual report for 1910-11 of this Guild, it is recorded that the following proposals were made by the Guild to the R.I.B.A. and the Society of Architects for their consideration in framing the proposed Registration Bill: "(1) Registered practitioners to employ only registered men as assistants; (2) restriction of the number of pupils and unpaid assistants in a registered practitioner's office; (3) to legalise a scale of salaries for assistants, subject to approval of registration or other agreed authority; (4) that the general provisions of the Bill should offer greater security to the pupil by surveillance of his progress on request, and ease of appeal to the registration or other agreed authority by his parents or guardians when necessity demands; (5) that the present position of the assistant in relation to open competitions be retained." It is stated that this is the first occasion on which any definite proposals regarding the pupil and the assistant have been made to the two premier architectural societies. The report of a special committee appointed to enquire into the fixing of a scale of minimum salaries for architects' assistants is included. The necessity for a recognised scale of minimum salaries, the reporters observe, is to be found in the

constant tendency of salaries to decrease to absurdly low levels, quite inconsistent with material necessities. Analysis of a hundred cases, London and provincial, show average salaries of 21s., 31s., 49s. 3d., 61s. 8d., and 65s. for assistants ranging in age from 19 to 40 and over, the higher sums relating, of course, to the higher ages. The committee find no difference of salary between assistants possessing qualifications and those without them. It is further observed that "exceptional men and exceptional work will always find exceptional markets, and therefore are absolutely excluded from our consideration." The committee propose that the scale of minimum salaries for a week of 39 working hours shall be 25s., 35s., 50s., 65s., and 70s.—a scale that is not in excess of that observed by "the average conscientious practitioner." The hon. secretary of the Guild is Mr. Ernest J. Dixon, A.R.I.B.A., 137, Church Street, Edgware Road, W.

NEWS ITEMS.

London's New County Hall.

It is announced that the King, who will be accompanied by the Queen, will lay the foundation of the new County Hall on Saturday, March 9th.

The Junior Institution of Engineers.

In a booklet that has just been issued by this institution, dealing with "Its Origin and Aims," it is stated that the society was established in 1884. A copy of the booklet may be obtained free from 39, Victoria Street, Westminster.

Laying Out India's New Capital

The Liverpool Health Committee have decided to recommend the City Council to lend the City Engineer (Mr. J. A. Brodie) to the Government of India for the purpose of assisting in laying out the new capital of India. A request for his services came from the Under Secretary for India through the Lord Mayor (the Earl of Derby), who had given instructions for a special council meeting to be held to consider the matter.

Stained Glass Windows in Cardiff Coal Exchange.

In the extensions of the Coal and Shipping Exchange, Cardiff, some recesses on the north side of the hall are fitted up with stained glass windows, made by Mr. William Pearce, of Birmingham, from the designs of Mr. Edwin Seward, F.R.I.B.A.

Personal.

Mr. James Denver, Manchester, has been appointed secretary to the Manchester, Salford, and District Building Trades Employers' Association, in succession to the late Mr. John Tomlison. Mr. Denver entered the office of the late Mr. John Tomlison in 1900, has acted as secretarial assistant to that gentleman during his long illness, and succeeded him in several similar appointments.

Usher Hall.

Models have been submitted for the outside statuary of the Usher Hall. For the central doorway there is to be a design of the Edinburgh City Arms, supported by figures emblematic of music. Two subsidiary doors on the front, and the entrances on Grindlay Street, are also to be decorated with groups allegorical of music. The sculptors selected are: For

the central doorway, Mr. W. Birnie Rhind, R.S.A.; for the other front doors, Mr. McLure, of Kensington; for the Grindlay Street doors, Mr. H. Camley, A.R.S.A. For the organ, the organist of St. Mary's Cathedral has been asked to prepare plans and specifications, and six selected firms are to be invited to tender for its construction.

British Firms Secure Large Canadian Contracts.

A contract amounting to £1,500,000 has been secured by Messrs. Pethick Brothers, of Plymouth and London, from the Hudson Bay and Pacific Railway Development Company, for the construction of docks, granaries, station yard, buildings, etc., at Port Churchill Hudson Bay. Another contract amounting to a million and a half has been secured by Messrs. Norton, Griffiths, and Co., for the construction of harbour works at St. John's, New Brunswick.

Insurance against Accidents to Workmen.

It is stated that the Bradford City Architect's department is experiencing difficulties in securing compliance in some cases with the Corporation's requirements as to production by contractors of accident insurance policies, endorsed in the prescribed form by the insurance companies with a clause indemnifying the Corporation against any compensation they may be required to pay under the Workmen's Compensation Acts by reason of the death of or injury to any person employed in carrying out contracts for the Corporation. The sub-committee having charge of the department have therefore decided to recommend the insurance sub-committee to consider the advisability of making arrangements whereby the Corporation may be indemnified by a general insurance against all such risks.

Kempsey Church, Gloucestershire.

Mr. St. Clair Baddeley, of Castle Hale Painswick, Gloucestershire, ex-president of the Bristol and Gloucester Archaeological Society, is appealing for funds to rescue from ruin and restore to its use the little Norman church of St. Mary, Kempsey. It was built before 1121 A.D., and like the Chapel of St. John in the Tower retains intact its original barrel vault while its walls have preserved almost in their entirety the Norman paintings. The tower is in so perilous a state that it threatens to collapse, while the church throughout must also receive immediate attention. It is estimated that £1,000 will be required for this work, of which above £300 has already been procured. Donations will be received by the hon. treasurer, the Rev. C. L. Money-Kyrle Much Markle, Herefordshire.

The New Australian Government Offices

As announced last week, Sir George Reid, High Commissioner for Australia, has, with the concurrence of his Government, appointed Messrs. Marshall Mackenzie and Son architects for the Commonwealth offices to be erected on the Aldwych-Strand site. Mr. A. Marshall Mackenzie is an Associate of the Royal Scottish Academy, and a Fellow of the Royal Institute of British Architects. His achievements include the Marischal College and King's College, University of Aberdeen, the Waldorf Hotel, London, Kingseat Asylum, Aberdeenshire, Mar Lodge, Crathie Church, Balmoral, and Hursley Park, Hampshire. It is stated that Mr. Alfred Burr, F.R.I.B.A., will be associated with Messrs. Marshall Mackenzie and Son in the work.



View from the West.



View from the South-west.

Photos : Thomas Lewis.

WESLEYAN CHURCH AND SCHOOLS, FOUR OAKS, BIRMINGHAM. CROUCH, BUTLER AND SAVAGE, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL

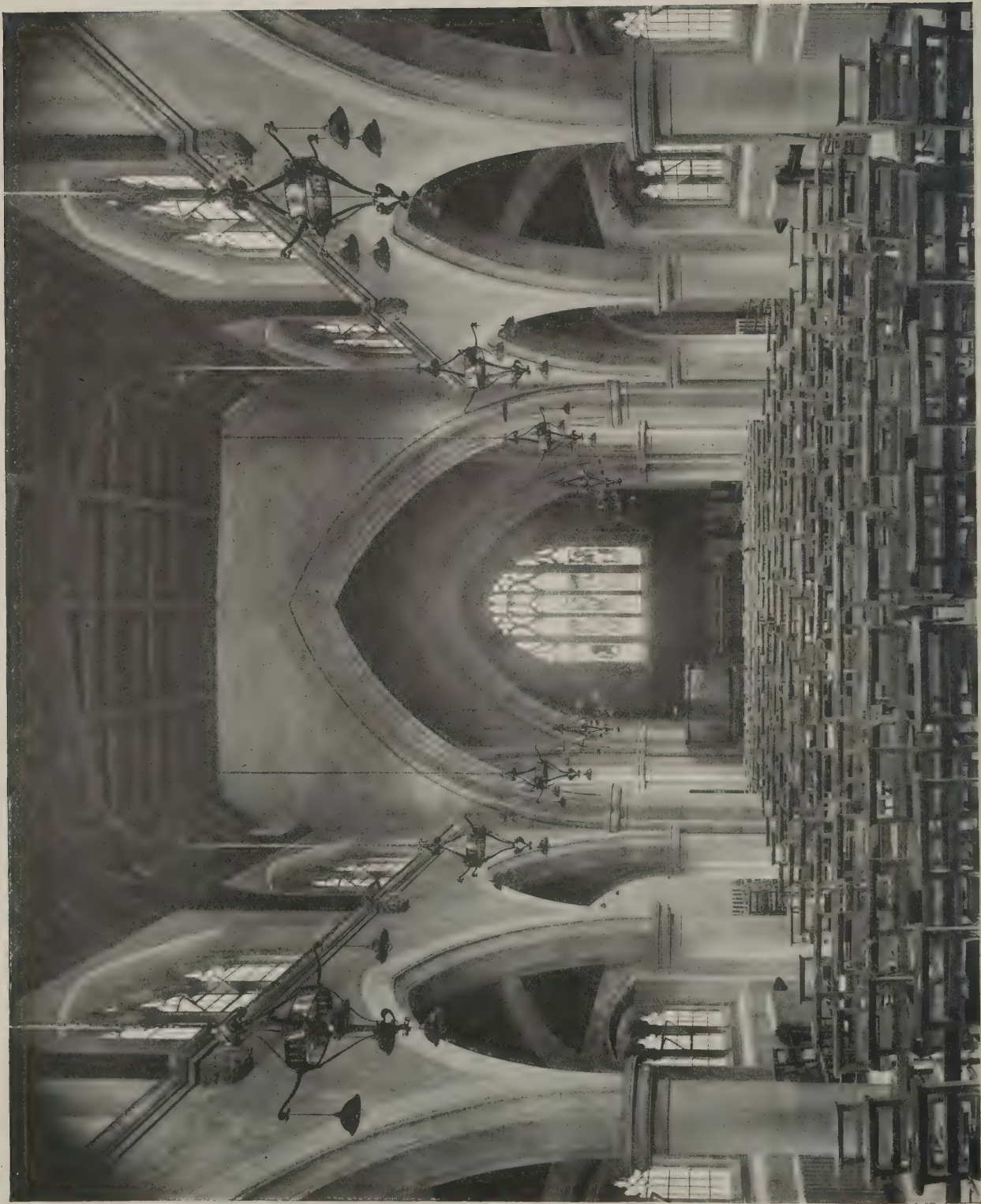
WEDNESDAY,
FEBRUARY 28th, 1912.

Volume XXXV,

No. 893.



UNION STATION, WASHINGTON, U.S.A.: SIDE ENTRANCE.
D. H. BURNHAM AND CO., ARCHITECTS.



WESLEYAN CHURCH, FOUR OAKS, BIRMINGHAM. CROUCH, BUTLER AND SAVAGE, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

FEBRUARY 28th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 893.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

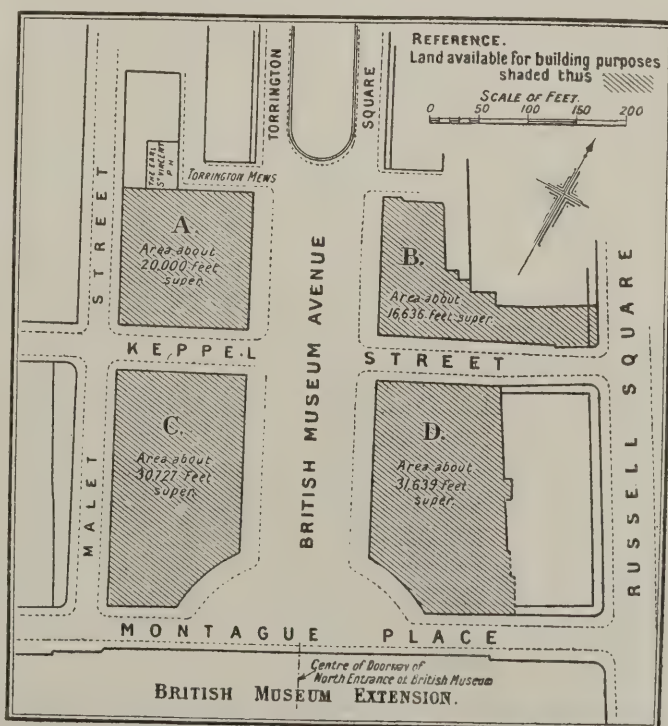
The New British Museum and Its Neighbourhood.

THE new northern façade to the British Museum is a worthy architectural completion of the celebrated building. It does not, it is true, repeat the lavish expenditure of space in architectural effect which renders Smirke's southern façade so imposing to the architect and so wasteful in the eyes of the practical man who knows how much the museum requires more space to display its contents. "We might have all these colonnaded spaces inside," is the thought of the collector and curator, and how much more room they would have given." When the British Museum was built the extent of its future development was not imagined; but it was felt that it was an institution of importance and of high pretensions, and should have a frontispiece in keeping; hence this expenditure on portico and colonnades. The Greek style was uppermost in men's minds then; fortunately, for nothing could have been more suitable to a building which was to be the storehouse of such a collection of Egyptian, Assyrian, and (above all) of Greek antiquities. One could hardly say a Gothic British Museum. Mr. Burnet has not repeated the free colonnaded screens with a terrace behind them which are displayed on the south front; probably a more practical generation would have exclaimed against such a waste of space; but he has kept the architectural character of the south front in the finely proportioned order of engaged columns which adorns the north front, and by the severe and carefully considered detail of the whole. It is a really fine piece of work, and suitable to its position.

It is of some interest now to consider how the neighbourhood will be architecturally developed, to which the new British Museum gives the key-note. There has been a great amount of pulling about of old Bloomsbury recently, but fortunately Bedford Square has been left alone so far, except in the case of a foolish order, a good many years ago, compelling all the tenants, at great expense to themselves, to insert plate glass in the front windows, and is entirely spoiling the original character of the houses; but the whole character of Russell Square has been altered. Lower Street had been much despoiled of its original red brick style by the casing of the doorways with very commonplace stonework, on the west side, and now the east side is half demolished, and waste spaces behind the houses of the street are waiting for some new development. The best point to be seen at present in the new development of the Bedford estate is the provision of a fine wide avenue centrally with the new north front of the Museum introduced by continuing the line of Torrington Square right on to the British Museum. Torrington Square is one of those open spaces inaccurately called squares, because there is no other convenient name, but it is in fact a longitudinal place with a garden down the middle of it. It is a row for a square, but it is a splendid width for a road, "British Museum Avenue" is, or should become, a really fine addition to the list of first-class streets, if adequately treated. It appears that there is a proposal to make the two largest plots bordering each side of this street a site for new buildings for the University of London; a building containing a large meeting hall on one side; a

building containing the Senate House on the other side. This promises well; such buildings ought to be architecturally of the highest class, and if carried out they ought to be so designed as to group appropriately with the British Museum façade. Nothing could be more suitable than the neighbourhood of a University with a great place of study like the British Museum; and the architectural treatment should express this relation; the new architecture should take its keynote from the architecture of the Museum. There would in that case be the making here of a really fine and dignified architectural group. We should hope, if the scheme is proceeded with, to see an important architectural competition for the treatment of the buildings on each side of British Museum Avenue.

There are two other points that may be touched upon in connection with rebuilding in Bloomsbury. There has been a general tendency to the demolition of the ordinary sized dwelling-houses in these early nineteenth-century streets, always with the object of substituting larger and taller buildings. But one result of this is that the neighbourhood is getting, in a hygienic sense, overbuilt. Streets and neighbourhoods which do not appear overcrowded when the houses are of moderate height become overcrowded when much taller buildings are erected on the same sites, and with only the same width of street between them. Some attention ought to be paid to this on the Bedford estate; if taller buildings are to be continually erected whenever leases fall in and the site is set free, some attempt ought to be made at the same time to widen the streets and increase the distance between the buildings; otherwise the neighbourhood will, in a hygienic sense, be spoiled by the very means which are being taken to improve it.



SUGGESTED SITE FOR LONDON UNIVERSITY.

(From the "Times.")

Another detail that ought to be attended to is that the first opportunity should be taken to remove the return building which, in order to afford University College a new laboratory, has been erected along one half of what used to be the open quadrangle of the college. The college buildings were the work of Wilkins, in his day an architect of some distinction, and he never intended that any building should be erected that would close the quadrangle on the street side; he left no design for any such scheme; in his mind University College was to be erected round three sides only of the quadrangle, leaving the whole square open to view from the street. One plan of his exists, it is true, showing an open colonnaded screen along the street side, but never any buildings shutting in the quadrangle. By the building that has been erected, not only is Wilkins's design spoiled, but the commencement is made of shutting in from public view one of the few open spaces in a very crowded neighbourhood. The first opportunity should be taken of rectifying this aberration.

Village Architecture.

AN unspoiled English village makes a charming picture, in general, from the point of view of both the painter and the architect. The old cottages are built of the materials of the neighbourhood, and therefore harmonise with the landscape; they are built unostentatiously and with no pretence at the picturesque, in the way in which it best suited the local carpenter or mason of a former day to build them; consequently they have picturesqueness and character, qualities which come best when unsought. The village church shows a spire, or a small and unambitious square tower, rising almost always from among trees, and forming the culminating point of the whole group—

“A haunt of ancient Peace,”

as Tennyson happily expressed it.

It is not very often that one can find such an untouched village now, in its pristine simplicity; and it has been suggested in a weekly paper that one of the beneficent acts of the National Trust might be to purchase such a village and preserve it intact from any change or alteration, both as an object of contemplation and as an historic example of what the typical English village once was, before the days of railroads. It is suggested that now is the opportunity for such an enterprise; that old estates are being broken up and sold wholesale by owners unable to stand the strain of recent legislation; that such owners have a regard for the village that lies near their old manor-house, and would rather place it in the hands of the National Trust for preservation than sell it to a speculator. The implied conclusion is that the National Trust would get it on easy terms, and not be required to pay its market value.

The proposal is not entirely new in its nature; we have seen it suggested in print, for instance, that the leading European states should combine to purchase Venice, to keep it unspoiled as a unique city, such as will never exist again. One may well wish that such a purchase could have been made both of Venice and Florence, before the system of modernising had begun, which has spoiled Florence and is threatening to take the poetry out of Venice. But we rather doubt whether the scheme of purchasing a village and making an historic show of it (for that is what it comes to) would answer. The charm of its spontaneous character would somehow, it is to be feared, evaporate under the process. A model village erected in the grounds of an exhibition, to show what ancient English villages were like, we can understand; that would be confessedly a show and understood as such. To turn an actual village into a show place seems an unreal kind of proceeding, likely to defeat its own object.

Would it be more to the purpose to endeavour to keep the existing picturesque villages from being spoiled? The main influence in spoiling them lies in the desire to erect new buildings economically with materials brought from a distance. It is the increased means of cheap transit that does it. Before that came into being the stone of the dis-

trict was used; or if it were not a stone country, and timber was abundant, real “half-timber” cottages were built not sham timbers put into a brick wall and plastered up between, to look picturesque. Now, brick is brought by rail from the nearest brickfield, and the cottage roofed with corrugated iron, it is so cheap and durable. We remember coming on such an estate agent's cottage in the middle of one of the most romantic districts of Scotland. It seemed to blister the landscape. Take to the materials of the neighbourhood, and there will be an end of this ugliness.

Not all the characteristics of the ancient cottage should be revived, however. For one thing, its windows are much too small, either for light or healthful conditions of life. Oddly enough, this is just one of the undesirable points which are imitated in the cottages built for garden cities. Nearly always the windows are too small—because they once were, when people did not know better, and when there was the barbarous incubus of a window-tax. We ought to know better now.

And then there is not only the village architecture to be considered, but what we may call the village engineering. Have any of our readers been in the way of perusing constantly the reports furnished from time to time to the Local Government Board, by special medical visitors sent down to report on the causes of typhoid or some other disease in a rural neighbourhood? Nearly always the story is the same; want of proper water supply; water obtainable only from shallow wells, into which all kinds of impurities percolate; or got by dipping into streams polluted by surface water from farms; and even the questionable sources of water supply often are only available by going a quarter of a mile or so for them, and bringing the supply painfully home in such receptacles as are not too large and heavy for two of the children to carry. This is a constant story in the Local Government reports on the prevalence of disease. If an existing village were really purchased, according to the suggestion aforesaid, as an historic example, in most cases conditions like these would have to be preserved also, to show what were the hygienic conditions of the true ancient English country village. That might be a useful object-lesson for the generations to come, certainly, but not one very creditable to the present generation. And as to the class of hygienic conditions which may come under the general title of scavenging, it is best to shut our eyes to them, if we want to enjoy the picturesque.

On the whole, instead of purchasing an English village to preserve it in the annals of the picturesque, had we not better try to keep them as picturesque as before, and make them more healthy? The first object is best attained by using local materials and labour; the second by providing a proper water supply, and the means of removing pollution.

Water-Colour Paintings of the Old School.

THE annual exhibition of selected water-colour drawings at Messrs. Agnew's in Old Bond Street is an event of never-failing interest. The present is the fortieth of these exhibitions, in which we can see a collection of the works of the older water-colour artists of the English school, less brilliant than the modern school, but with more repose in composition and colour, and more simplicity and direct in their aims. In regard to some of them, it is true, one has rather to revise their former reputation. Copley Fielding, very popular in his day, is one of these; he cooked his effects rather, and his foregrounds, as in “On the Way to Firth Beacon,” are rather conventional in treatment. In an opposite direction, one can see that David Cox sometimes, as in the “Old Wooden Bridge,” rather overdid his “blottesque” manner of working, but “Bettws-y-Coed Churchyard,” a drawing which has emerged at many water-colour exhibitions, is a masterpiece of brush-work. A good many of the early topographical drawings of Turner, those of the date 1800 and thereabouts, are here, and are very interesting. “We

Cathedral," a rather large drawing of the west front, painted in 1802, shows how well and solidly Turner could paint Gothic architecture at that date. By Turner's predecessor, Girtin, is a little masterpiece, "The White House, Chelsea Reach," the very small white house forming the one bright spot of light in the composition. His view of Southwell Minster is interesting historically, as it shows that at the time he painted it the square pyramidal slated spires over the western towers were standing; they must have failed or been removed since his time, as they formed part of the modern restoration work; they have been restored with much less projection at the base than is shown in Girtin's drawing, but look better so. There are plenty of fine examples of Prout's solid and learned drawing of mediæval architecture. Prout did not see as much colour in old stonework as modern artists see; to him old masonry was mostly in various shades of brown; he depended on the living figures introduced for the element of bright colour; possibly his view of the facts about ancient masonry was more correct than that of the modern artists who read all kinds of colour into it. Prout was a mannerist, of course; but it is a very fine manner, and few men have painted architecture so well. Another old water-colour artist who dealt only in architecture was James Holland, who loved not, like Prout, the brown stone of mediæval cathedrals, but the marble and colour of Venice; his drawing of the Rialto is a good example of his art. Compared with these two, Read's Interior of Münster Cathedral is merely what may be called architectural drawing; hard and correct as such, but not a picture in the true sense. David Roberts appears, too, among the painters of architecture; his delicate little drawing of the temple of Kalabstré is unlike his usual style, and somehow suggests the work of Mr. Albert Goodwin. Among the landscape pictures none here are so fine as Collier's, an artist of the rather later period, who may be said to be an artistic descendant of David Cox, but one who surpassed is master; keeping to a broad and true water-colour style, but never becoming, as Cox sometimes became, ragged and untidy in execution. He perhaps shows best that the older school of water-colour could accomplish.

Mural Paintings for Schools.

A COMMITTEE has been formed for promoting an exhibition, in May next, at the Crosby Hall, Chelsea, for the encouragement of the decoration of schools and other public buildings by mural paintings; but we should rather from the announcement that the decoration of schools is the main object, as one part of the exhibition is to be devoted to "designs by architects for the disposition of schoolroom fittings in combination with mural decoration." When the exhibition opens we shall be able to see what the proposal has produced, and in what direction it is tending. In the meantime it may be suggested that perhaps the ideas which have prevailed as to mural paintings in schools need some reconsideration. Various colour-printed designs, by Mr. Heywood Sumner and other able artists, were produced some years ago, with the view of their serving as mural decorations to schools, either by being hung up or being otherwise affixed more permanently to the walls. These met, we believe, with some acceptance, but it may be questioned whether they were quite the right kind of thing for the purpose. A good many of them included what are evidently regarded as decorative landscapes, only a little more "decorative"—i.e., much further removed from actualities of nature than usual. Decorative landscape is a possible form of art, as the French have discovered; it means with them landscapes which are like nature as far as they go, but which omit a good deal of detail, select only simple lines of composition, and avoid ocular deception as to effects of distance. Such landscapes can be painted on a wall without strongly contradicting the impression that it is a flat surface; examples of them, sometimes by distinguished painters, may be seen in almost every artist's exhibition at the Salon. But the mural subjects for schools, just referred to, went a good deal further than this.

They represented not so much decorative landscapes as symbols of landscape, treated much as landscape is sometimes treated (but never should be) in stained glass; flat tints divided off by strong dark lines; a red circle representing the sun, rising from behind a green curve representing the undulation of the landscape; and so on. Now, it may be doubted whether children either understand or enjoy this kind of production. They cannot be expected, of course, to understand anything about conventional treatment for a mural plane; all they know is that they see a painting which is supposed to represent a scene in nature, but which is quite unlike anything they themselves see in nature. As far as landscape subjects are concerned, they would be better pleased and better instructed by framed pictures of landscape hung on the walls. This, it may be replied, is not mural painting; but it is something which, as far as landscape is concerned, is a good deal better. Even the higher class of decorative landscape as practised by the French artists would not appeal much to the infant mind; it requires a good deal of education in art to understand it. It would be far more instructive and probably more interesting to children, to have a series of framed representations of celebrated towns or scenes, hung on the walls. They would then realise that, without being able to travel like the richer folk, they had got some knowledge of what different distant places looked like. That cannot be done with mural painting, because the real places do not look like that.

We should be very glad to see decorative mural painting practised and encouraged in schools, but not in the form of attempts at landscape. What ought rather to be encouraged is the representation of historical scenes and personages; that is, figure painting representing great characters and actions. These can be made intelligible in a style suited to mural painting. Mr. Walter Crane, speaking at the meeting referred to, said he was greatly in favour of symbolical and allegorical subjects, "as they were most likely to impress the young mind." He may be right; we should be glad to think he was, for undoubtedly that class of subjects is the most suitable of all for decorative mural painting. But that subjects of that class impress the children of the poor (or the parents either, for that matter) seems rather doubtful. They do not get at the symbolical meaning. A mosaic copy of Watts's "Time, Death, and Judgment" was produced, a good many years ago, on the wall of an East-end church; may be there still, for all we know. The remarks of the local bystanders, when it was unveiled, showed that they had not the remotest notion of the object or intent of such a work. One good woman, pointing to the half-length nude figure of "Time," said: "I suppose that will be her Majesty the Queen." However, each generation of Board-school children is probably a little better educated than the last, and perhaps the symbolical style may be worth trying for paintings in schools. It would certainly be gratifying if it succeeded, both from the educational and the artistic point of view.

Smaller Class-rooms.

THE long-standing disagreement between the Board of Education and the London County Council as to the size of classes in elementary schools having been virtually determined, the Council now finds itself obliged to do compulsorily what it ought to have done years ago with a good will. It is recommended that the Education Committee shall prepare a scheme providing for the reduction of the number in a senior-school class to 40, and that of an infant-school class to 48. This change from classes of about twice the accommodation indicated will necessitate heavy expenditure on the necessary structural alterations in existing schools, and, of course, considerable modification in the planning of new ones. The Council are asking for a period of fifteen years in which to effect the reform! and it is estimated that the sites and buildings programme for that period will involve an expenditure of £4,500,000 sterling. It is good to look ahead, but why push the principle to so ridiculous an extreme?

THE OPEN-AIR LIVING-ROOM OR LOGGIA.

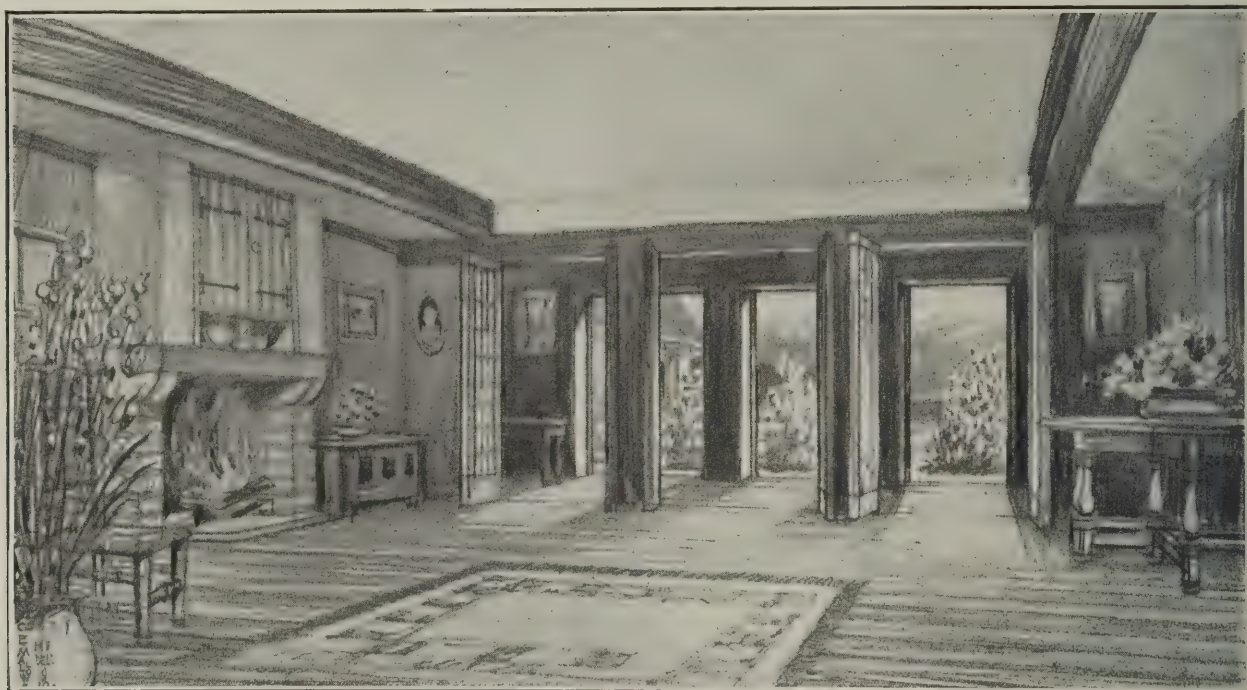
BY C. E. MALLOWS, F.R.I.B.A.

AT the present day, when so much care and attention is being devoted to hygienic considerations of living, it is a matter for no little surprise that such a pleasant and health-giving feature as an open-air living-room does not appear as a usual and an accepted provision in a modern plan of house and garden.

The objection it usually meets with is that, in this changeable and uncertain climate, it can only be serviceable for a few days in the middle of summer, and that for the rest of the year it is so much waste space. It is quite true that unless very careful attention is given to the planning of the room, to its accessibility, to its right relation to the rest of the house, to sunshine and prevailing winds, it can easily fall short of success; but with care and forethought the open-air room can be made not only a very desirable and practical part of the house plan, but one of the most delightful and

Another plan which has sometimes been tried, and which also falls short of success, is to place the loggia directly accessible to the service but detached from the house, and approached by a paved way or pergola. This method, although a great improvement on the one just described, as food may be served hot in the latter, is still almost sure to fail of its purpose for the greater part of the year, because of the necessity of crossing an open space unprotected from the weather, a necessity which is not always an inviting prelude to meals.

The open-air room to be quite successful as a matter of plan must communicate immediately with the dining-room (it is best with no intervening lobby or space of any kind), and should be quite close to the service door in that room. It should form a kind of annexe there, and should be so placed in relation to it that the service crosses are at the corner or end of the dining-room only, leaving the rest free for undisturbed use as a reading or writing-room. Perhaps there are few better positions than the north-east angle of the dining-room, and, externally, at a re-entering angle formed by the wall of the main part of the house



DESIGN FOR AN OPEN-AIR LIVING-ROOM IN A MONMOUTHSHIRE HOUSE. C. E. MALLOWS, F.R.I.B.A., ARCHITECT

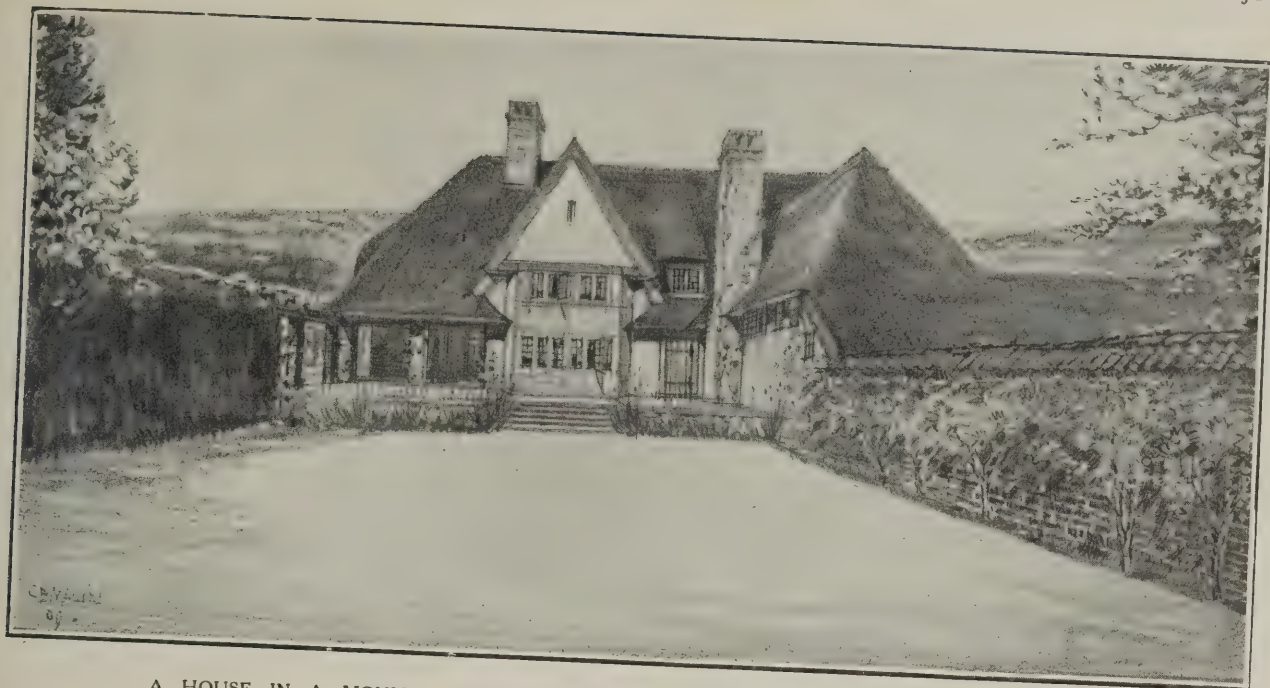
attractive links between the garden and the house. It can, indeed, be made to add very greatly to the artistic charm and interest of both, and, by a little thoughtful contrivance, the plan of the garden can be brought, by means of this loggia, actually into the house plan by a delightful gradation between the two, securing from house and garden most pleasant effects of light and shade and framing, from the house, interesting pictures of the garden.

From the practical point of view, and therefore the all-important one, the greatest care is undoubtedly necessary to meet the objection stated above, and one of the first considerations should be the placing of the loggia in relation to the kitchen and dining-room. It should rarely, if ever, be detached from the house itself. If it is treated as a detached building altogether, with no covered connecting way to the house; if it is placed (as it sometimes is) at the end of a terrace, although it may form an attractive ornament in the garden, its practical use in all probability will be for an occasional afternoon tea in midsummer and for the rest of the year as a receptacle for all kinds of odds and ends, garden chairs and tables—a sort of auxiliary garden store, which is not precisely the end to aim at, but which is the actual end to which some of these otherwise admirably designed rooms have been known to descend.

extending southwards, and a line of outbuildings or high wall extending eastwards. In this position, with an open stone-paved terrace on the east side, for use in the evenings of a summer such as last year, when coolness and fresh air are welcome and no shelter is desired, the open-air room or loggia invites use not only in the dog-days but on many a bright morning and evening of early spring and late autumn.

In such a plan as that just indicated, the north side of the room would be formed by the wall of the outbuildings or adjoining garden, the east side would be open—treated either as an archway or by piers forming wide openings—the south side would be similarly treated, and the west side would be occupied by a wide door or two or three small ones glazed nearly to floor level, so that the full effect of the garden seen from the dining-room through the shade of the loggia could be obtained. The open spaces on the south and east sides would have movable screens for use when weather conditions made some such protection necessary. The size of such a loggia would be from about 16 to 18 ft square and longer (but not wider), according to the size of the house and the needs of its inmates.

A loggia of these dimensions would, of course, be suitable for a fairly large house, and might perhaps be called a luxury entailing an outlay which luxuries usually involve.



A HOUSE IN A MONMOUTHSHIRE VILLAGE. C. E. MALLOWS, F.R.I.B.A., ARCHITECT.

The problem is a different one when connected with smaller houses, and one not quite so easy of solution, particularly when an additional condition is laid down to the effect that the open-air room, whilst fulfilling at times its primary purpose, should also be capable of being used in other ways, thus securing economy of space in the house plan.

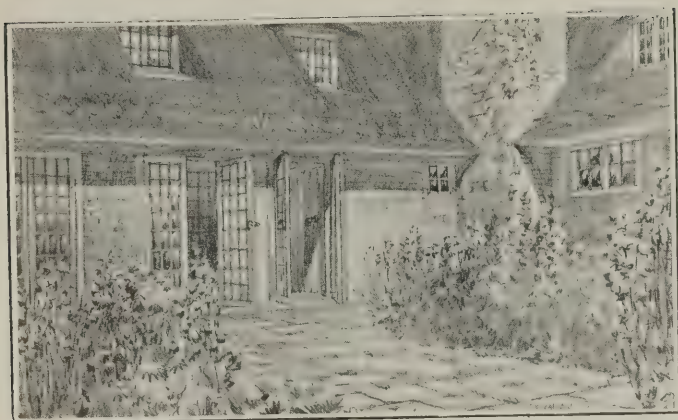
Such a condition formed part of the requirements of the small scheme for a thatched cottage here illustrated—in addition to an old four-roomed cottage shown on the right hand of the perspective sketch. In this plan the wide corridor between the hall and living-room forms the open-air room when required, either complete in itself as such, or by opening the glazed doors on either side, or as part of the dining-room, which in this way can be added to the loggia, and both spaces together be formed into one large room entirely open on the south side to the garden and the fresh air, being screened. It is on both sides, by the projecting wings of the little parlour on one side and the living-room on the other. With this arrangement of double-glazed doors on each side of the corridor (which is 7 ft. wide) the advantages obtained are obvious.

In the hottest weather all the doors can be opened wide; in cooler weather the sides can be closed; and in winter time, or when open-air living is quite impossible, the corridor forms an effective bar to the dining-room against the cold; yet with the windows glazed nearly to the floor line the full benefit of the garden picture, with its small paved court as a foreground and the glimpse of the distant country beyond, is always obtained.

In the planning of loggias or open-air rooms to smaller houses—for houses costing, say, from £500 to £3,000—the first consideration, after the conditions mentioned above have been complied with, is naturally one of size. Unless this point is very carefully considered, the provision of such a space will be useless. Many such rooms have been foredoomed to failure from the first because when the necessary table has been placed in it no room could be found for the equally necessary chairs. The width has oftentimes been sacrificed for a wholly unnecessary length in order to obtain breadth of another kind, in external effect. Probably the best seating arrangement for a loggia is that



A HOUSE IN A MONMOUTHSHIRE VILLAGE. C. E. MALLOWS, F.R.I.B.A., ARCHITECT.



A HOUSE IN A MONMOUTHSHIRE VILLAGE: DETAIL OF WINDOWS TO OPEN-AIR LIVING-ROOM. C. E. MALLOWS, F.R.I.B.A., ARCHITECT.

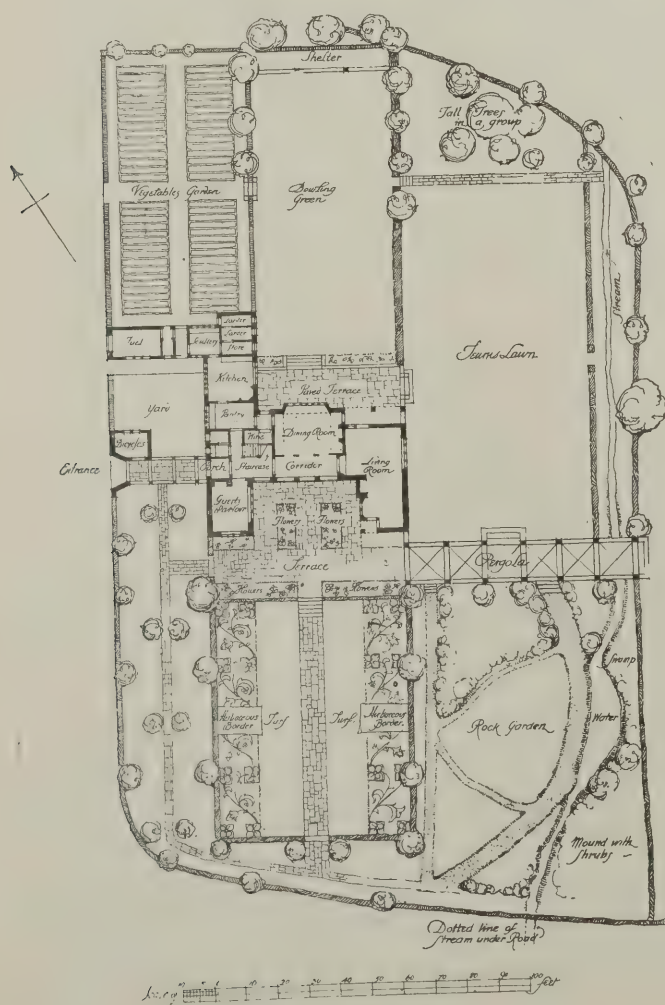
obtained by placing a row of chairs next the walled part or back, and using a long and narrow table, about 2 ft. wide, with a seat at each end. The garden side of the table would thus be free, and those seated at the table, on three sides of it only, would be enabled to enjoy an uninterrupted sight of the garden pictures. If such an arrangement of chairs and tables is set out to scale on paper it will be found that a width of 7 ft. is the very least admissible if good shelter is to be obtained and the service to the table free of discomforts and possible disasters!

This width, as just suggested, allows for one row of chairs and a narrow table; a wider table and a double row of chairs would mean a minimum width of 10 ft. But the former plan is obviously the better one in every respect, and is certainly much handier for the table service. The

position of the loggia in the plan will, of course, be governed by the nature of the site, its aspect and prospect—each problem must be settled on its own merits; but as a general rule it is well to secure an approach from the north or north-east side of the dining-room and to obtain shelter in a re-entering angle, as described in the larger scheme.

COPYRIGHT IN ARCHITECTURAL DESIGN.

A CURIOUS case of the intervention of the law in France, in protection of an architect's copyright in his design for a building, is recorded in the issue of the R.I.B.A. *Journal* for February 10th. It is curious because the facts are unusually clear and simple, and the judgment of the Court, on the contrary, is rather vague and self-contradictory. The plaintiff, as we should call him in England, was an architect, M. Lenoir, who discovered at Royan a building, the Amiot Private Hospital, which was a copy of the casino built from his designs at Gourmalon. That the façade of a casino should be copied for a hospital building seems rather odd, but the fact was considered by the Court as fully established; and as French architects have, and not infrequently adopt, the right of placing their names on the buildings erected by them, M. Bureau, the plagiarist architect, was ordered to remove his name from the hospital building, and to substitute the words, "built from the design of M. Lenoir." So far it is all plain sailing; but the further judgment of the French Court is rather difficult to make logic of. The Court inflicted on the plagiarist architect the modest fine of £2 (500 francs) only, and proceeded to draw a distinction between the case of an architect and that of a sculptor or painter. In the case of the latter, it is said, the material damage caused to the artist or the purchaser of the work is equal to the profit resulting from the sale of each object reproduced; but this, it is argued, "cannot be the same as the case of an architect, who not only sells to his client his plans and designs, but deprives himself besides of the right to build a second house similar to the first for a third person without the consent of the owner, unless otherwise agreed." Thus, it is argued, "the architect suffers on moral damage as the result of the work which he has created being wrongly attributed to a plagiarist"; and moral damage seems to be assessed at the value of £20. Mr. John V. Simpson, who quotes the case in the *Institute Journal*, comments: "If the architect had parted with his copyright, it would not be he, but the owner of the building, who would be aggrieved by the piracy. If he had not parted with it, he had certainly not deprived himself of the right referred to." That certainly seems quite clear; but the case is another point of comparison between the architect on the one hand and the painter or sculptor on the other. Does a painter or a sculptor, when he has sold a special work to one purchaser, consider himself at liberty to produce an exactly similar replica of it for another person? So, as we understand it, the law would not prevent his doing so; but it would hardly be considered a very fair proceeding, and would be apt to injure the reputation of the artist. Surely the same reasoning applies to an architect if he has retained his copyright, he has the same legal right to erect an exactly similar building for another client, but he would probably be restrained from doing so by the same considerations which would affect the sculptor. If, therefore, he only receives "moral damage" from plagiarism, it is surely the same with the sculptor; there is no ground for putting them in different categories. The moral damage, to an artist of any description, is surely worth something more than the modest sum at which the French Court assessed it. The case seems to have been a gross and quite indefensible one, for which the offending architect has got off very easily. It would be regrettable if it should be accepted as a precedent in England, where, in spite of the new Act, there is only too much disposition to regard an architect as a person who has no rights on the same footing as other artists.



RESIDENTIAL COLLEGES.*

BY EDWARD WARREN, F.S.A., F.R.I.B.A.

The greater portion of Mr. Warren's paper was devoted to a discussion of the origin of collegiate institutions, with descriptions of many of the earlier foundations. Of more immediate practical interest were his personal observations on the details of college planning, and it is to these that chief attention is here given.

I SPEAK entirely of residential colleges, embodying the accepted ancient features of chapel, hall, kitchen and offices, master's dwelling, common room, and fellows' and undergraduates' rooms, as well as the modern requirements of lecture-rooms and bursaries, and those concessions to modern habits and ideas, the common-room, smoking-room, the junior common-room, and last, and most recent, bathrooms. If you adopt the quadrangular plan, and I think that you cannot, generally speaking, do better on all accounts, you will be wise, unless the ground and other circumstances permit of large courts with low surrounding buildings, to remember Dr. Caius and the open front to the south, or else to have open corners which can be bridged by arches, to admit of air currents, or "perspiration," to use Dr. Caius's own term. Such open corners can be easily and effectively managed if you adopt the cloister ground plans with arcade or colonnade, and this in itself is a practical and architecturally admirable arrangement.

Or you can perhaps find useful suggestions in the double-screened or pierced ground storey of Peterhouse. I am assuming that you adhere to the healthy and invigorating system of passage-ways open to the air.

As the plan of repeated staircases, with their dependent groups of rooms on each successive floor, still finds, and is likely still to find, favour in colleges, it may be well for a moment to consider some of its possibilities, and, to that end, the author showed a plan of Brasenose College, in which were seen the arrangement of the old chambers, and Mr. T. G. Jackson's disposition of the new. But if you arcade your ground floor, you must, of course, narrow the depth on that floor available for rooms, and will probably find that lecture-rooms, bursaries, single rooms for non-resident tutors, or single sets, can best be placed there.

Mr. Lock has pointed out that the arrangement of two sets in depth with the dividing wall has two disadvantages—(1) you lose the opportunity of free air passage, or perfilation, so easily obtainable if you have single sets of sitting or "keeping" room and bedroom, in the depth, by means of the usual communicating doors; (2) both bed and sitting rooms must have the same aspect. There is a further disadvantage, which is that as your span increases your roof is apt to grow higher, and it is generally desirable to keep it down. If bathrooms are supplied, and with a sufficient number of baths, the bedrooms can be very small—say about 100 square ft., or even slightly less, but of course a comfortable bed space, not facing the light, should be provided. Bathrooms are very generally placed in the basement, and this where ground floor is raised a little, so that the window-heads can be brought slightly above ground, does very well, provided that the necessary areas for light and ventilation can be outside the quad-

rangle—that is, at the back of the ranges, and wide enough, and that smaller areas or fresh-air inlets are provided in the quad, so as to give a cross current. The baths are generally arranged in cubicles some 7 ft. by 5 ft., with partitions 6 ft. high or thereabouts, and raised well off the floors, in the ratio of a bath to four or five men, and about half the number of shower-baths. A service room for keeping and drying towels, and a general dressing-room, or two, for muddy youths fresh from "Rugger" or "Soccer," is most advisable, with a supply of lockers for flannels, etc. If you have a bathroom and consequent bath boiler, somewhere in the basement, a hot-water supply to each pantry can be arranged. The Fellows' rooms are usually now in sets of three, a large sitting or tutorial room, a smaller sitting-room, and a bedroom, and should have an "oak." College bursaries are merely offices for college business, and should be conveniently placed near the entrance. There must be at least two good well-lit rooms, the bursars' and bursary clerks', and a strong room and lavatory. Frequently more rooms are needed, a senior and a junior bursars' rooms, and a college office or meeting room.

The master's dwelling has grown from the few rooms formerly allotted to celibate masters, and is now a complete domestic dwelling for a married man. It is much like a good rectory house in requirements, but with one special need, a really large study or library, with an ante-room leading to it. The dining-room should also be a large-room.

The common room has expanded from the ancient parlour or solar, into a group of rooms constituting the Fellows' private club, and having a large and comfortable sitting-room, where dessert, wine, and coffee are taken after dinner in hall, and where luncheons are generally served. Attached to, or near, this is the now invariable smoking-room, and it is not infrequent to have a third and smaller room for writing, etc. The junior common room is the undergraduates' club, and usually consists of one large room, where breakfast, and frequently luncheon also, is served. It is useful to provide a second room for reading, writing, etc., and for both senior and junior common-room groups a distinct lavatory is advisable. There is a new refinement of the common-room group which I have just been called upon to supply at Oxford—that is, a common-room dining-room, with an ante- or drawing-room leading to it, and a cloak-room and lavatory. This is for the private or collective hospitalities of members of common-room, and completes the club. I have not yet heard of a demand for billiard-rooms at the universities, but have met with that requirement in the masters' common-room of a large public school.

Residential colleges for women are multiplying and extending, and growing in architectural importance and beauty. These naturally require somewhat different arrangements, the general system, being more domestic, and open-air pas-

sages and basement bathrooms, etc. being usually avoided. Large bed-sitting, rooms usually take the place of the masculine double set, but parlours and music and recreation-rooms are provided. Otherwise the recognised collegiate requirements apply, the chapel, hall, and library being just as essential as for the other sex. Bursaries, perhaps, are not so formal, and common-rooms have a rather different character, being, for one thing, connected more with tea than the grape. I have not yet heard of any demand in a ladies' college for a common-room smoking-room, senior or junior, but it may come. Girton College by Mr. Alfred Waterhouse and Newnham by Mr. Champneys, at Cambridge; Somerville partly by Mr. Champneys, Lady Margaret Hall by Professor Blomfield, at Oxford, and Holloway College in Surrey, are among the best known, but Mr. Champneys is now adding to the number Bedford College in Regent's Park.

Chapels.

The chapel of a college is traditionally a chancel, screened off from the ante-chapel, to which the non-collegiate are admitted, and is the survival of the monastic choir screened from the secular nave. The seats are arranged as stalls, looking inwards instead of eastward, as in secular churches. Return stalls are allotted to the master or president, and his more immediate satellites. The seats are ranged in tiers rising from the gangway, the Fellows occupying the upper and more dignified rows, the undergraduates the inner and lower. There is usually no pulpit, as sermons are only occasional, and are delivered from the lectern. The organ and choir gallery are very usually placed on top of the screen. A college chapel, if of greater height than adjacent ranges of the building, and placed axially more or less east and west, should, if on the side of a quadrangle, be always on the north side, so as not to cast its shadows where shadow is detrimental.

The chapel is the better without any east window as a rule, and chapel and hall alike are the better for uninterrupted ranges of side windows, which are best kept high, in the first case, on account of the stalls and their panelled backs, in the second to avoid a low light in the diners' faces, and to provide the opportunity of a high wainscoting, which is incidentally an admirable background for college portraits.

In planning a non-residential college, —say the modern University college of a large town, and intended, of course, for both sexes—the problem becomes very different. The chapel is usually not required, the hall subserves different purposes, and is usually more or less of a speech hall; lecture-rooms, lecture theatres, and class-rooms, scientific laboratories, and workshops are needed, and not infrequently some sort of museum is added, and a gymnasium is not unheard of. Colleges, residential and non-residential, have been devised and built in recent years in considerable numbers, and it is interesting to observe in what manner the collegiate sense has been accepted or interpreted by those to whom it has fallen in recent years, either at Oxford or Cambridge, in immediate contact with these ancient things, or elsewhere free from such propinquity, to build colleges or schools, of collegiate type. As example, of such buildings, the author cited Keble College (Mr. Butterfield), Mansfield (Mr. Champneys), Hertford (Mr. T. G. Jackson), additions to Trinity and Brasenose (Mr.

*Extracts from a paper read before the Royal Institute of British Architects, February 19th.

T. G. Jackson), quadrangle of St. Swithun at Magdalen, and President's lodgings to that college (Messrs. Bodley and Garner), the L-shaped beginning of a court to King's, Cambridge (Mr. Bodley), lodge court to Pembroke (Mr. G. G. Scott). Sir Aston Webb and Mr. Ingress Bell have recently built a new court, that of St. Michael's for Caius College, faced in fine stone ashlar, and most ingeniously and adroitly planned. The same architects have been responsible for much collegiate work in many places, notably at Birmingham University, the Science College in London, and in the fine and comprehensive scheme of the new Christ's Hospital at Horsham. Mr. H. T. Hare has designed for Cambridge a Non-conformist theological college, for Presbyterian graduates, known as Westminster College, in brick and stone, the forerunner of his greater and more striking collegiate opportunity in the North Wales University College at Bangor.

DISCUSSION.

Mr. Basil Champneys, proposing a vote of thanks, said he had long been puzzled as to how the standing arrangement of staircases in colleges first came into being. The whole arrangement seemed to be without a hint of precedent. Introduced by William of Wykeham, it had ever since held its own, and no better method had been devised up to the present day. Referring to the corridor arrangement of plans for colleges, the speaker said that one of its great disadvantages was the difficulty of providing adequate lighting. In colleges for women, however, this type of plan was obviously the best. Another difficulty encountered was the predominance of science in modern universities. To satisfy all the requirements in this connection caused a good deal of trouble.

Professor F. M. Simpson, seconding the vote of thanks, recalled that the University of Paris was the first to bring the college system into favour. Paris was said to have had fifty colleges of its own; how was it they had ceased to exist? He thought it was largely owing to the state of the country at the end of the sixteenth century. In consequence of the civil war and other influences, towards the end of the sixteenth and at the beginning of the seventeenth century, it was recorded that the colleges of Paris were practically empty. England, in the sixteenth century, had similar difficulties which, however, resulted, not in civil war, but in the Reformation. The Reformation was responsible for the clearing-out of the great bulk of the students; but with the Reformation came the Renaissance, filling those colleges again with another set of students. In Paris, of course, the colleges belonged to the clerical party, and were not confiscated as they were in England. Continuing, the speaker regretted that Mr. Warren had not included the big buildings for scientific research. The requirements for a modern laboratory were large windows, lofty rooms, and walling reduced to a minimum. The old buildings, while charming in themselves, were unsuitable by reason of their small windows. A scientist would say that the three primary requirements of a modern laboratory were (1) light, (2) more light, and (3) still more light.

The Rev. J. B. Lock, M.A., Professor at Caius College, Cambridge, referring to the question raised by Mr. Champneys, advanced a theory concerning the origin of the college plan. Queens' College, he said, was almost an exact replica of

Haddon Hall; in both cases there were two courts, a gallery in the same position, and a chapel on the north side of the quadrangle. The only difference was found in the position of the kitchen. Mr. Warren, he continued, had made no reference to his restoration work at his (the speaker's) own college, where, among other works, the lecturer had erected a screen, converting what had been a very bare interior into a splendid mediæval hall. With regard to the desirability of having one side of a court open, Mr. T. G. Jackson had provided a solution of the difficulty in his Law Library and Sedgwick Museum by erecting the library on the top of arches, thus ensuring a current of fresh air from one side of the court to the other.

Mr. T. G. Jackson, R.A., said that the college plan had grown up insensibly without any definite motive at first. The universities were never founded. Nobody founded Oxford or Cambridge; they grew up in an accidental way. Originally, for about 200 or 300 years, there were no colleges at all, the universities existing without them. Brasenose Hall, he continued, was so named after a huge door knocker, long before the college itself existed. These houses, which then constituted the University buildings, were of the ordinary domestic kind. Two or three were subsequently thrown together, and therein they would find the origin of the college type. More of these houses were gradually swallowed up and formed into one college. The original colleges, therefore, before the existing buildings, would have looked like a number of houses in a street, each having its own independent stairway. This, he thought, was beyond all doubt the origin of the universities.

Mr. Aymer Vallance having spoken (illustrating his remarks with a few slides),

Mr. Warren briefly replied.

SOCIETIES AND INSTITUTIONS.

YORK AND YORKSHIRE ARCHITECTURAL SOCIETY.

Lecture on San Micheli.

A lecture by Mr. J. Stuart Syme, Lic.R.I.B.A., was delivered on February 14th before the above society on "The Life and Work of Michele San Micheli," Mr. A. B. Burleigh, Lic.R.I.B.A., being in the chair.

In the course of his remarks, the lecturer said that a study of the life of San Micheli is interesting, not only on account of the distinctive qualities of his work, but also on account of his position in perhaps the most important period of the Italian Renaissance. Born in 1484, the son of an architect, brought up in an architectural atmosphere, sent to Rome at the age of 16, to study for his profession, he developed into a genuine architect, in contradistinction to some of the other masters, who bestowed part of their allegiance on the other arts of sculpture and painting. Nor is it surprising that his work appears to have certain architectonic qualities lacking to some extent in the works of his contemporaries.

The most famous architect practising during San Micheli's youth was Bramante, who was engaged during the early part of it in Lombardy, not so very far from Verona, and during the later years in Rome. In fact, the youth and the

master went to Rome about the same time—namely, about the year 1500—Bramante to engage in the work of the Cancellaria and Giraud Palaces, and the youth, we can hardly doubt, to seek inspiration equally from new and old work, the practice then as it is to-day. We may be pardoned, therefore, for supposing that San Micheli came under Bramante's influence; and there is something to support this in the similarity of the façades of the churches of Santa Maria in Organo at Verona and San Satiro at Milan, not to mention other points of similarity in various window and other details.

San Micheli's greatest claim to fame arises out of his military architecture. His first direct connection with such work appears to have occurred when he was about 30 years of age, and within a few years he had effected a revolution in the design of permanent fortifications, the importance of which entitles him to rank with Vauban among the greatest of military engineers of all time. This work was the invention of a new type of bastion, whose front was angular, the apex towards the attack, and the subtending sides when produced cutting the line of the curtain outside the bastion and at points more or less remote from it as circumstances directed. The new arrangement permitted the faces of the bastion to be completely swept by fire from the curtain, and also to some extent from the adjoining bastions. This was impossible with the square and circular towers in use previously, and, combined with the other new features the designs presented, was of enormous advantage to the defence. It should be pointed out that Viollet-le-Duc has disputed San Micheli's claim to this honour, in favour of some unknown French engineer, but his evidence is by no means conclusive. San Micheli seems to have been engaged almost exclusively in fortification work for a number of years, and there can be little doubt that this experience, which involved a careful consideration of questions of utility and sound construction, greatly influenced him when called upon to design works of a more decorative and architectural character.

Two of his finest buildings are the Porta Nuova and Porto del Palio at Verona, both designed with remarkable simplicity and directness. He also designed four fine palaces in Verona, of which the Pompeo and Bevilacqua are the most notable, and the Grimani Palace at Venice, the perfection of whose lower storey is somewhat marred by the faulty proportion of the upper stages, for which it is possible that San Micheli was not responsible. He made several designs for churches, but, unfortunately, few of them were carried into execution, and even these were not completed in the author's lifetime. As a designer he was gifted with considerable facility, which he exercised with the greatest refinement and restraint. His work, while sound both constructionally and artistically, is never dull, and does not lack originality. If we may believe Vasari, the character of the man was in keeping with his work and would justify one in regarding the study of his life and art as well worth the attention of the thoughtful member of his profession.

The following officers for the present session have been elected: President Mr. A. B. Burleigh, Lic.R.I.B.A. vice-presidents, Mr. T. W. Whipp, A.R.I.B.A., and Mr. J. H. Rutherford, Lic.R.I.B.A.; hon. treasurer, Mr. J. D.

TRADE AND CRAFT.

Claridge's Patent Asphalte.

Although Claridge's Patent Asphalte Company was established so long ago as 1838, and must, in the period of nearly seventy-four years that has since elapsed, have done a vast amount of work, besides circulating a good deal of information on the subject, it seems that there are still very many "men who build" who are but imperfectly acquainted with the properties and uses of the material. Those who acknowledge themselves to be in this position, as well as others who fancy that they know all about a material that has been for so long in such general use, should procure the pamphlet "On the Uses and Fireproof Properties of Claridge's Patent Asphalte, with a list of the purposes to which it may be advantageously applied, and Suitable Thicknesses," which has been issued by Claridge's Patent Asphalte Co., Ltd., Victoria Embankment, W.C., and Pyrimont Wharf, Cubitt Town, E. It contains reports of experiments, and of results of fires, affording convincing proof of the fireproof properties of Claridge's asphalte when used in construction, descriptions of roofs, flooring and paving, damp-coursing, reservoirs, and many other applications of the material; and a series of illustrations (usually in section) of various forms of construction in which this asphalte is employed; the descriptive matter being in each case succinct and practical. Claridge's Pyrimont Seyssel asphalte has been largely employed in the construction of fireproof floors, in which its behaviour in actual conflagrations has been repeatedly noted. From such ordeals it has always emerged with high credit. Innumerable flat roofs, at home and abroad, have been executed in this material, and the reports concerning them all testify to their maintenance of efficiency in keeping out the wet, and their complete indifference to extreme variations in temperature. Seyssel asphalte (which is a bituminous limestone from the lower Jura, brought to a state of mastic) is perfectly inodorous and indestructible, never becoming brittle nor cracking. It has been used in a vast number of important buildings, including Windsor Castle, Buckingham Palace, Guy's Hospital, the Tower of London, Woolwich Barracks, Holloway Prison, etc.; and in the formation of flat roofs, has been of signal service in countries that are apt to be visited by hurricanes and heavy rainstorms.

New Clerk of Works at St. Paul's.

The Dean and Chapter of St. Paul's Cathedral have appointed Mr. W. E. Bolwell to be their clerk of the works in place of Mr. E. J. Harding, retired.

Messrs. Whiteley's New Premises.

In the account of Messrs. Whiteley's new premises at p. 199 of the Journal for February 21st, it should have been stated that the manufacturers and erectors of the staircase as illustrated on that page are Messrs. Walter Macfarlane and Co.

Shop in Castle Street, Edinburgh.

In the description of Mr. Hector Laing's shop in Castle Street, Edinburgh (Mr. W. J. Walker Todd, architect), illustrated by the centre plate and by a view on p. 208 of last week's issue, it should have been mentioned that the granite used so effectively in this work is "Glendougl Grey," supplied by the Douglas Granite Co., Ltd., Linksfield Road, Aberdeen.

In general design and construction simplicity was again the predominant feature. The aisles were merely passages for intercommunication, and where not vaulted were covered with simple lean-to roofs. There were no triforiums at first—for example, Fountains, Buildwas, and Kirkstall), although these were introduced later at Roche, etc. The details were kept simple in form; and while there are signs in later works of a break-away from former austerity, yet it is always marked by a quiet restraint and refinement. The treatment of gables and external walls was illustrated by examples at Fountains, Kirkstall, Byland, Tintern, and others.

Regarding pointed arch vaulting, it was shown that the Cistercians, though not the inventors, hastened the popularity of the former, and were among the first to arrive at the complete Gothic solutions of the ribbed vault, as the result of local experiment by the monks. The arrangement of conventual buildings and apartments was fully described. The lecturer appealed for a revival of arts and crafts, a revival of Gothic and styles practised by our fathers, founded on the principles of truth and virtue, as taught by the seer of Coniston, John Ruskin.—T. DAVIS.

GLASGOW INSTITUTE OF
ARCHITECTS.

At the quarterly general meeting of the Glasgow Institute of Architects, held last week, Mr. John B. Wilson, F.R.I.B.A., president, in the chair, it was reported that a letter had been forwarded to the Glasgow Corporation supporting the proposal that a town-planning exhibition be held in Glasgow, and a reply had been received that a sub-committee of the Corporation was at present considering as to having the exhibition brought to Glasgow at an early date. The Council had under consideration the proposal that the extension of the municipal buildings should be carried out by the city engineers' department, and a letter had been forwarded to the Corporation protesting against that proposal. The Council noted with satisfaction that the Corporation had remitted the matter back to the Committee for reconsideration.

The Council, recognising the importance of the National Housing and Town Planning Council to be held in Glasgow on March 19th and 20th, had appointed its members as delegates from the Institute to attend the conference.

A full report was made to the meeting regarding the steps taken by the Council for amendment of the conditions of the Finnart School competition. The meeting approved of the action of the Council in prohibiting members of the Institute from taking part in the competition in view of the unsatisfactory result of the negotiations with the Board. It was pointed out that the R.I.B.A. and the Edinburgh Architectural Association had also placed an embargo on the competition.

There was submitted to the meeting a resolution passed by the Council in terms of the articles recently adopted by the Institute, for the better regulation of competition, by debarring its members from engaging in competitions the conditions of which are considered unsatisfactory. The resolution, which was approved by the meeting, defined what is to be regarded as professional misconduct on the part of any member

White, Lic.R.I.B.A.; hon. librarian, Mr. E. R. Tate, Lic.R.I.B.A.; hon. secretary, Mr. Harold E. Henderson, Lic.R.I.B.A.; assistant hon. sec., Mr. J. M. Andrew; member of council, Messrs. A. E. Munby, A.R.I.B.A., S. R. Kirby, Lic.R.I.B.A., F. Dyer, K. Ward, Lic.R.I.B.A., and J. M. Andrew.

The prizes for the best set of measured drawings have been awarded by the assessor, Mr. A. E. Munby, M.A., A.R.I.B.A., to—1st, Mr. C. Leconby, and 2nd equally divided between Mr. D. Morrell and Mr. C. W. C. Needham.—HAROLD E. HENDERSON, hon. sec., 3, First Avenue, Haworth, York.

MANCHESTER SOCIETY OF
ARCHITECTS.*Three Centuries of Scottish Architecture.*

At a meeting of the above-named society on February 14th, Mr. A. N. Paterson read a paper entitled "Scottish Architecture, Ecclesiastic and Domestic, XV. to XVII. Centuries." In tracing the history of the early development of Gothic art in Scotland, he showed how till the 15th century Scotland followed in the wake of the general traditions of building in England; that then, when England had passed to the Perpendicular period of flattened arches, fan vaulting, and perpendicular windows, Scotland, severed from English influence by the war, developed an architectural character of her own. This she maintained for the two following centuries, but it was to France rather than England that she turned for friendship and inspiration. The time for the building of churches had now passed away, and Mr. Paterson showed with some excellent slides the development of the country house from the peel tower and castle.

GLASGOW ROYAL TECHNICAL COL-
LEGE ARCHITECTURAL CRAFTS-
MEN'S SOCIETY.

At a meeting of this society on February 6th, Mr. Jas. A. Lauchlan lectured on "Cistercian Monasteries"—(1) Historical, (2) architectural, (3) a plea for national art tradition. After glancing at the history of Europe from the beginning of the Christian era, the lecturer described the Anglo-Romanesque school of architecture and the influence on it from the continent. Although there was no style of architecture peculiar to any of the monastic orders, independent of the country in which they settled, yet the uniformity in arrangement of plan and design in Cistercian work makes the uses of this order easily to be picked out from that of their contemporaries, and this peculiarity of Cistercian work was pointed out as one of the most important influences operating on the architecture of the 12th century. The keynote of Cistercian work was shown to be a logical simplicity of purpose, a rejection of all unnecessary features of ornament, which was a direct contrast to the work of their contemporaries. The development of their plan from the simple unadorned churches of their first years to the typical Cistercian plans of Kirkstall and Fontenay's followed, then, after the development of the presbytery from the simple unadorned examples of Buildwas and Kirkstall to the more or less complicated systems of Cîteaux, Pontigny, and Fountains, Roche, and Byland, was shown, and explained by the need for more chapels as the number of monks in orders increased.

SOME NORTH-COUNTRY SCHOOL COMPETITIONS.

In recent school competitions, the school architect has been met with the difficulty of having to work to some degree in the dark, the regulations issued by the Board of Education in London having become obsolete through their own recent requirements. In the regulations, one of the rules stipulates that the class-rooms must be grouped round the central hall. The Board of Education have found out from experience that this interferes considerably with the efficiency of the school teaching, owing to the noise being transmitted from one class-room to another.

The central hall also interferes with the

efficient ventilation of the class-room, and the Board recommend that in certain types of school the hall should be isolated so that the class-rooms do not open directly off the hall.

Wallsend School.

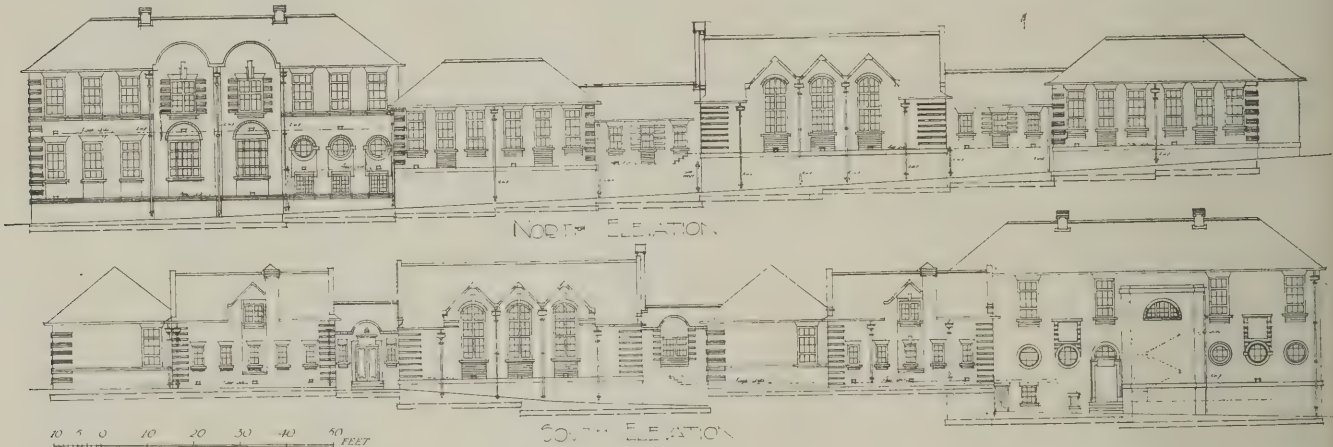
In the plans submitted for the Wallsend competition (here illustrated) the local Council required a detached room for the joint use of both the boys and girls. This competition was restricted to architects having an office within a radius of twenty miles. The school was to be designed in four departments, the infants' school providing accommodation for 400 scholars, and boys and girls' departments each 520. The housewifery department was to consist of laundry, cookery, and three

or four rooms, together with class-room. About twenty sets of designs were submitted, and Mr. A. W. S. Cross, M.A., F.R.I.B.A., the assessor, awarded the first premium to the design by Messrs. Marshall and Tweedy. The plans have since been approved by the Board of Education.

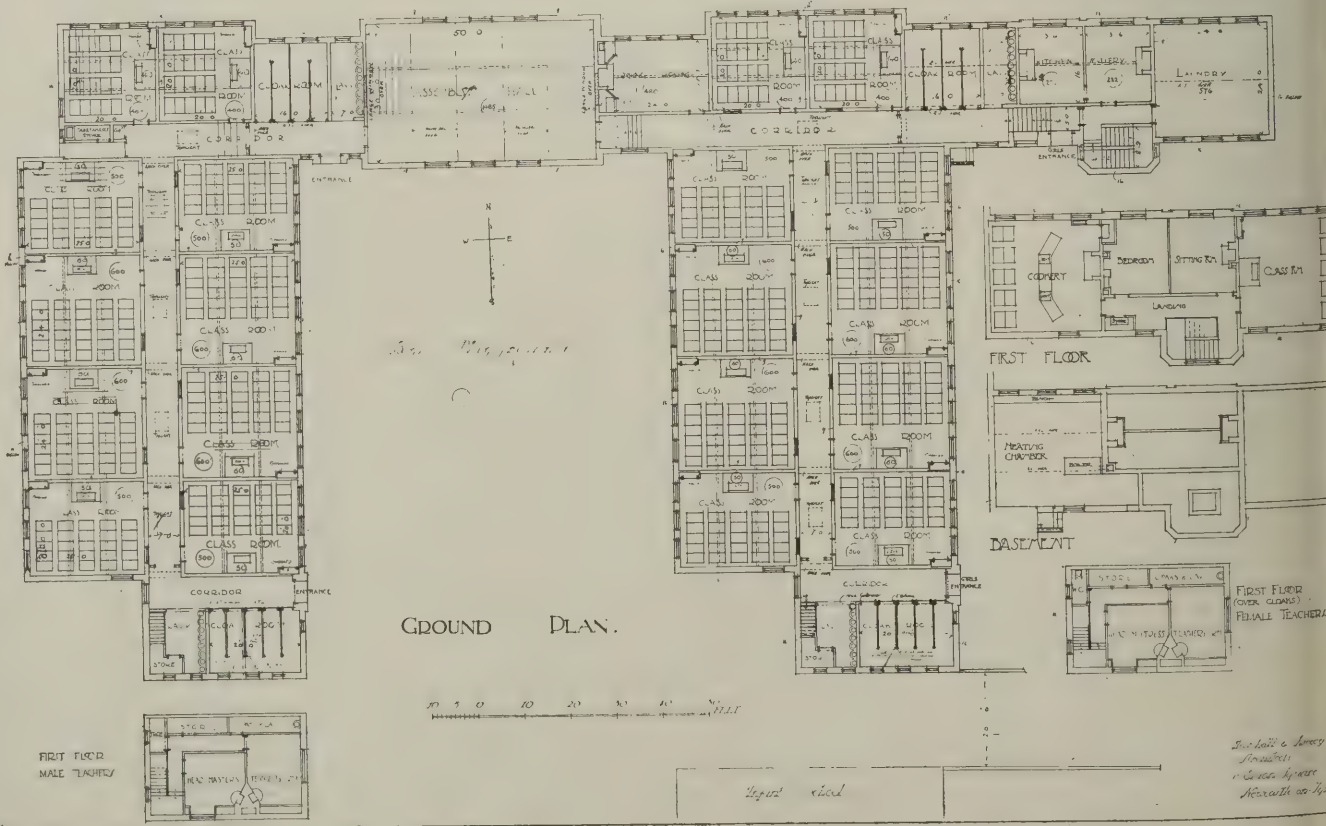
Walker Gate School.

Another competition recently held in Newcastle is that for a school at Walker Gate, to accommodate 730 children, and an infants' school for 400, for the Newcastle County Council Education Committee. The plans were assessed by Mr. Bilson, F.R.I.B.A., who awarded the first premium to Messrs. Marshall and Tweedy, Newcastle, the Education Committee confirming his report.

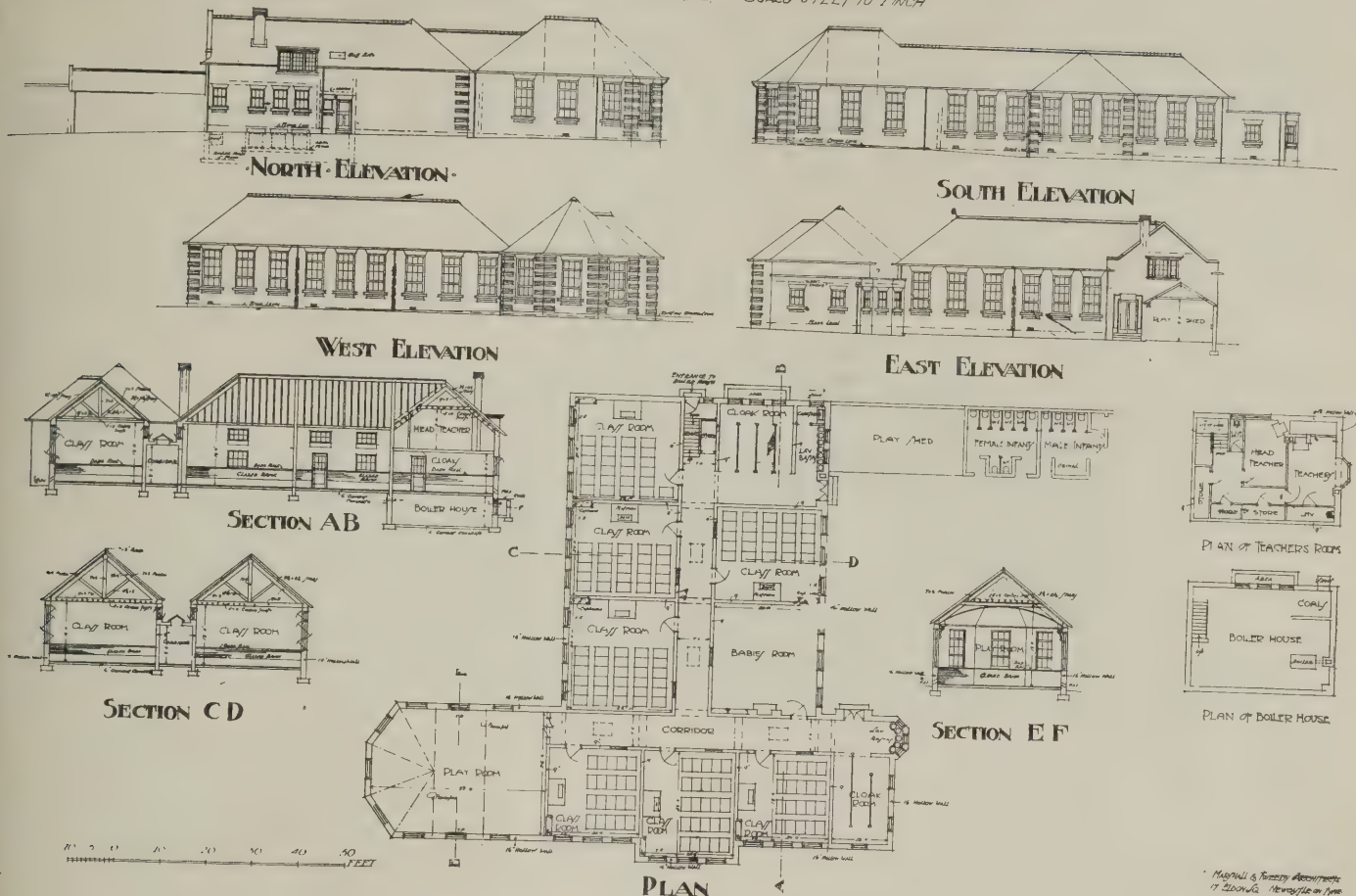
NEW COUNCIL SCHOOLS - WALLSEND FOR THE BOROUGH OF WALLSEND EDUCATION COMMITTEE



PROPOSED ELEMENTARY SCHOOL - WALLSEND: Girls & Boys Department.



NEW COUNCIL SCHOOLS WALLSEND INFANTS. SCALE 8 FEET TO 1 INCH



FIRST-PREMIERED DESIGN. MARSHALL AND TWEEDY, ARCHITECTS.

Whitley Bay School.

The plans for this school (p. 228) were awarded the first premium offered by the Northumberland County Council Education Committee for a new school to be erected at Whitley Bay, the assessor in this case being Mr. W. H. Knowles, F.R.I.B.A., F.S.A., who awarded the first place to Messrs. Marshall and Tweedy. The schools have since been erected from their designs, and were opened last year. This illustrates the type of school designed to meet the requirements of the Board of Education rules and regulations previous to the new recommendations.

Messrs. Marshall and Tweedy were also the successful competitors for the King Edward Schools, North Shields, recently erected for the Tynemouth Town Council, accommodating about 1,400 children.

SOME WORKING-CLASS DWELLINGS PROBLEMS.*

BY E. C. P. MONSON, F.R.I.B.A. F.S.I.

In introducing this subject the author proposed to deal principally with the problem of providing suitable housing accommodation for the poor worker or artisan, and such as would be provided under the Housing clauses of the Housing and Town Planning Act and other suchlike Acts.

"Housing" is a problem which has been a source of worry to all classes in all ages, and although vast improvements

have taken place it is still not now settled, and perhaps at the present time gives rise to more discussions, theories, and arguments than any other subject.

As the power of the Barons gradually became less, or as the power of the people began to assert and organise itself and the desire for more comfort and quietude arose, law and order as the natural consequence became established. So we come to the charming Tudor houses of the period when it may be assumed that houses for other than the lord first came to be erected. Previous to that the worker had either lived in the lowest storey of the lord's castle, and occupied the position of servant, or else had occupied a shanty erected under the shadow of the walls of the castle, and was a serf.

Hallam says that in the time of Edward the Third the cottages seem to have generally consisted of a single room without division or storeys. Chimneys were unknown in such dwellings till the early part of Elizabeth's reign, when a rapid and sensible improvement took place in the comforts as to housing of our yeomanry and cottagers.

After that we find the Jacobean and debased Gothic periods ending with the quaint Queen Anne residences, afterwards the Georgian types of dwellings, and finally the Victorian and present-day methods.

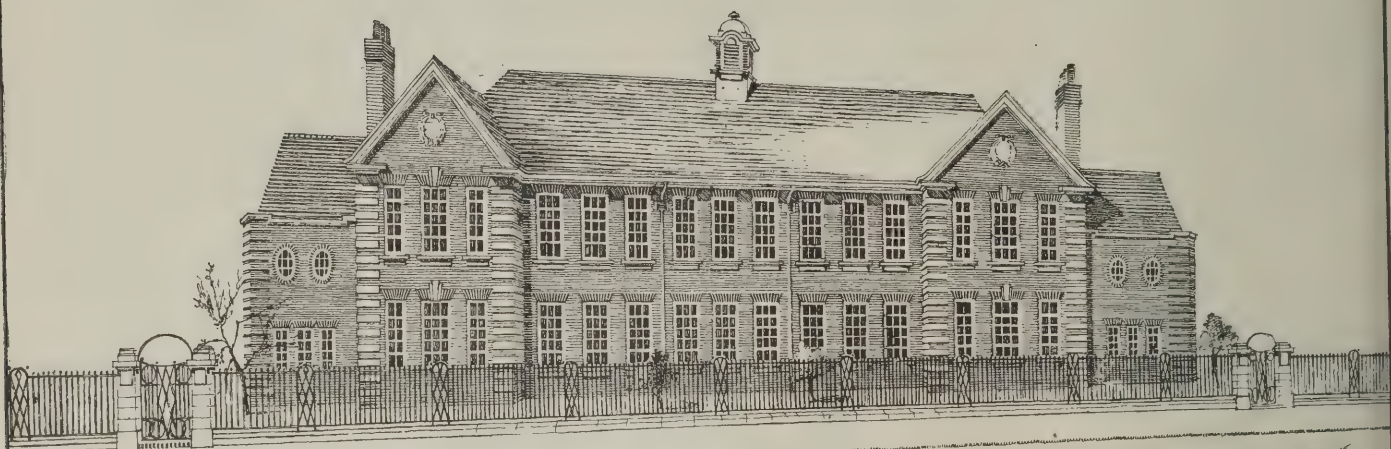
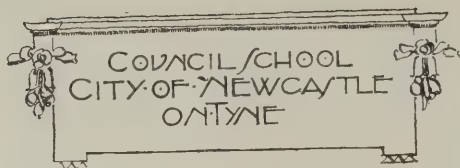
In the 18th and 19th centuries, great strides were made in building houses for the middle and poorer classes of the community, and in London itself many hundreds of streets were laid out and developed about that time. In fact, previous to then, London was more or less a small place to what it so soon

afterwards became, owing to all sorts of restraints—Acts of Parliament and the like—which had been attempted and passed to keep down house building. Many of these areas, however, which were so hurriedly covered with speculating-built houses soon came to grief and developed into slums, and, besides being insanitary, were badly designed, and numbers were either built on the old-fashioned back-to-back principle, or else provision was made for only a very small back yard, and only in the cases of the large and more important houses was there any more than a very limited air space provided, and anything was thought to do for the poor. These are now being or have had to be removed to make way for something else. Better houses, however, were built fronting around a square, which of course was what we consider more up to date.

Thanks to the munificence of such men as Mr. Peabody, Mr. Lewis, Mr. Guinness, Mr. Sutton, and many others who have lavishly given or left of their substance for the acquisition of sites and erection of dwellings for the poor, this matter is being dealt with. Then again there are Sir W. H. Lever of Port Sunlight, Mr. Cadbury of Bournville, and Mr. Rowntree of York, who have launched out and shown what personal sacrifice and a desire to better the conditions of everyday life can accomplish during their lifetime.

Then there are societies like the Letchworth Garden City, Harborne Tenants (Birmingham), Hampstead Garden Suburb, Ealing Tenants, and many others, where people can go to purchase the houses which are put up on a well-

* Extracts from a paper read before the Society of Architects, February 8th.



MARSHALL & TWISS Architects
17, LONDON ROAD
NEWCASTLE-ON-TYNE

FIRST-PREMIATED DESIGN FOR SCHOOLS AT WALKER GATE.

ordered co-operative principle and live together on co-operative lines.

Points with which the author dealt in some detail were as follows: (1) Which is it advisable to build—block dwellings, or (2) cottages?; (3) the block *versus* the cottage; (4) if cottages, whether detached, semi-detached or in rows; (5) number of houses to the acre; (6) the essentials of the best house built cheaply.

Block Dwellings are divided into two kinds—(a) The Associated.—A type which is quite out of date. They comprise living room and one or two bedrooms only, and all scullery and sanitary arrangements are apart from the living-rooms and used by the tenants of more than one, very often three or four other tenements. (b) *The Self-contained.*—This type is good, each flat having everything which an ordinary cottage would have, and combining all the comforts of a house without interference from anyone.

The cost of block dwellings, according to Alderman Thompson, altogether apart from the cost of the land, averages about £100 per room, and the land costs about £75 per room, making the total about £175 per room. This is higher than the cost of the cottage per room, but it can be readily seen that where the site is in London, or other large cities, it is impossible or impracticable even from a philanthropic standpoint to build other than block dwellings. Block dwellings, however, should not be built higher than five storeys, and only four if the cost of the land is such as will allow this, owing to the vital question of adequately lighting all the rooms.

In the case of the trustees of the will of the late W. R. Sutton, the site at the corner of Old Street and City Road, London, E.C., comprised only 1½ acres, and cost about £95,000, and the buildings just over £70,000, a total of £165,000 for 284 tenements and 14 shops—885 rooms

and sculleries and shops, etc., which works out at about £80 per room for the buildings and about £107 per room for the land; and on another site where buildings are now being erected at Chelsea, the cost of the land was £76,000 for about 3½ acres, and the building contract is £176,000, a total of £252,000 for 675 tenements and 34 shops—2,175 rooms and sculleries and shops, etc., which works out at about £80 per room for the buildings and about £35 per room for the land, and in both these schemes after deducting 40 per cent. for repairs, rates and taxes, and other outgoings, the rents are so arranged as to produce 2½ per cent. only on the total capital outlay.

The blocks here provide for one, two, three, or four roomed tenements, and in all these tenements accommodation is made for a scullery-bathroom, separate w.c., larder, coal cellar, etc., which is not counted when speaking of the number of rooms. The entrances to the flats are all from staircases. Every floor is of fire-resisting materials, as also are the staircases and roofs; the playgrounds and roadways are made with tar macadam; shrubberies are planted wherever possible, and care is taken to tend the trees and shrubs so that they shall have a fair chance of life. Staircase walls are in glazed bricks, and generally the whole of the work is carried out not so much with the idea of building cheaply as that of saving in the cost of upkeep and renewals.

In Liverpool, where the Corporation have been doing a great and praiseworthy work on the Bevington Street area, and where they are proposing to spend a further considerable amount of money, the block dwellings are to comprise living-room, one or two bedrooms, scullery, w.c., but no bath. The entrances to tenements are from balconies placed outside the buildings, but the author was not greatly in favour of this particular

method of entrance. It saves space, however, because one staircase can be made to serve a larger number of tenements than if the entrances were direct from the staircase.

In Manchester very many dwellings of this latter character have been put up by the Corporation, and it is becoming quite a usual thing for large municipalities to go into the question of doing (as rightly they should do) something for the poor.

Cottages.

The Sutton Trustees are purchasing a site at Birmingham, about 21½ acres in extent, at a cost of about £18,500 including roads and sewers, and the proposition is to build 215 houses and cottages of varying sizes, accommodating a total of 251 families in 1,000 rooms and sculleries, the whole scheme working out, with roads and sewers, at about £60,500, which gives an average cost per room of £40 for the buildings and £18 for the land and roads. The figures from the author's own work prove conclusively that the cost per room in the cottage for buildings and site is less than the cost per room and site in the block. The cost of cottage building as given in "Housing Up-to-Date," by Alderman Thompson, averages roughly from £40 to £70 per room, and the average site cost about £7 10s. per room, but it is impossible to make any comparison, because cottages can only be built to be productive where the cost of the ground is comparatively low.

The Block versus the Cottage.

The great question with regard to block dwellings is whether they are more or less healthy than the cottages, and it must be admitted that good health is dependent not on one condition but on many. The primary command of creation was "Let there be light," and it

because the builders of block dwellings in some countries have neglected to obey this command that the block dwellings exercise such a mischievous influence in regard to the health of the people.

Another point against block dwellings is that they are liable to be overcrowded; this, however, ought never to happen where the superintendent and his assistants keep a sharp look-out.

I agree with Mr. Henry Aldridge, the energetic Secretary of the National Housing Council, in his definition of what every workman's home should be. "To begin with, every normal, healthy dwelling for a family should possess at least three bedrooms—one bedroom for the parents and two bedrooms to enable the children to be separated in the years of youth and adolescence. The delicacy and privacy of individual life in the years of youth form one of the most important conditions for physical improvement."

The standard of a normal, healthy home for a workman's family comprises three bedrooms, large living-room, scullery and bath—and wherever possible a parlour; and no workman's home can be regarded as properly equipped unless it has a garden, however small. On the broad question, taking all things into consideration in connection with this clause, the cottage comes out best and wins the case, and should be built wherever possible.

Whether the cottage should be detached, semi-detached, or in rows depends very largely upon the number it is desired to place upon any given plot of land, and makes a considerable difference in the number to be so placed, because if they are in rows more land is available for building—and the overcrowding of houses is to be deprecated—but even if they are so placed it is far better in my opinion to provide a small yard, then the back way, and beyond that the garden, and, to, say, every four or six houses, run a passage-way from back to front, with rooms over, to connect up the back way as much and as often as possible, and prevent its becoming the nuisance it sometimes does; but if the number of houses to be erected to the acre is generally speaking, says Mr. Raymond Unwin, reduced to anything like 15, terrace houses with back passages will be found to be a more expensive method of development than with passages between the houses.

Is it better, however, to build houses semi-detached? Here again the question of money comes in, for it is impossible to build in this manner as cheaply as terrace houses; there are three main walls to be erected to start with, instead of two. The objectionable features, however, which may arise in connection with the back way in the terrace house are one away with, and every house has its garden directly attached thereto. Detached houses are much better, but again the cost is still more. The best way of arranging houses economically is semi-detached, but the passage between the houses should be not less than 4 ft. wide, and can be used jointly by the occupiers on either side; this method does away with the obnoxious back passage, and is the best solution of that very irritating law regarding back ways which at the time every local authority sought and fought for until they found out the cost of up-keep, lighting, etc., and would now glad to be rid of.

Number of Houses to the Acre.

At present in certain districts as many as 35 and even more houses are built,

on an average, upon every acre of ground. This of course means overcrowding and discomfort, terrace houses and practically no gardens, but 13 to the acre is a very usual number, and is good. The Birmingham Corporation in their Town Planning Scheme for East Birmingham have fixed the limit at 10 per gross acre, with a density rate of 20 per gross acre. This has caused dissatisfaction, and the builders and landowners are grumbling. A good all-round average is 13 to 14 per gross acre, giving plenty of garden ground.

With 25 houses to the acre, the tenant pays 7½d. per week for 127 yds. With 9.6 houses to the acre, if the tenant paid 1s. 0½d. per week he could have 423 yds. for his plot, and the landlord would make the same profit upon his land, because while the effect of reducing the number of houses to the acre from 25 to 9.6 is to increase the cost per plot by 68 per cent.; its effect also is to increase the area of the plot by 333 per cent.

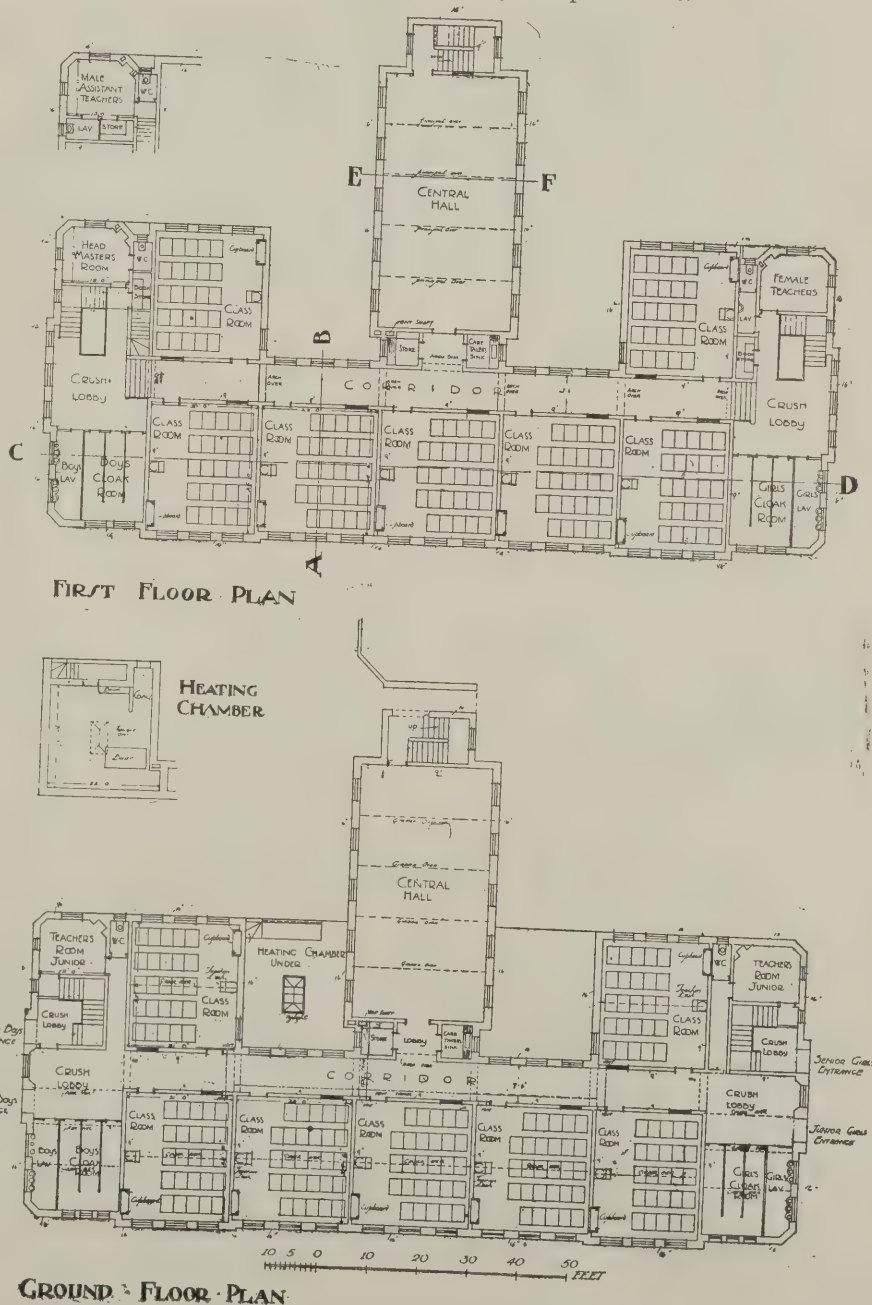
How to Build Houses Cheaply.

Under the Housing and Town Planning Act and the various Small Holders'

and other Acts great incentive will be given to people to build houses for themselves, either through some of the approved societies or by borrowing the money in other ways with the aid of the Acts. I do not propose to go into the many methods in which this can be done, but will only say that I consider the best way to build cheaply is for the client to employ a thoroughly practical and responsible architect, not a faddist or creamer after the impossible, but one who understands his subject and can give the best results for the least money.

DISCUSSION.

Mr. H. Freyberg, F.S.I. (London), in proposing a vote of thanks, said that the difficulty in London was that as fast as slum areas were cleared away they blossomed out in all their fruitfulness in other parts of London. It was absolutely useless for individual effort to go on unaided, and it was of no great practical value for any municipal body to clear away slum areas in their own particular municipality if they were allowed to grow up in others.



FIRST-PREMIATED DESIGN FOR SCHOOL AT WALKER GATE, NEWCASTLE-ON-TYNE.
MARSHALL AND TWEEDY, ARCHITECTS.

Mr. G. A. T. Middleton, A.R.I.B.A., seconded, remarking on the statement that in early days houses were grouped close round the castle walls, and said that, in England at all events, they had their little village communities right through the twelfth, thirteenth, and fourteenth centuries very much as they were at the present day; each man living in his own cottage—king of his own castle—a style of living which was considered the best for the workmen of to-day.

Mr. Henry R. Aldridge (Secretary of the National Housing and Town Planning Council), supporting the vote of thanks, said that Mr. Monson was doing what was absolutely essential at the present time in trying to work out from the architect's point of view some of the very difficult housing problems. Mr. Monson had done very practical work in designing the better type of workman's cottage, and he (the speaker) very much appreciated his services in this direction. It was quite

possible, he thought, to get Mr. Monson's ideas brought in with due economy, and unless economy went hand in hand with development, they would never get town planning to help the people it was intended to help. The "grandiose" type of Germany was admirable from their point of view in their desire to make them notable towns, but in England town planning would have to be dealt with on different lines, taking the home as its starting point instead of the "boulevard," as in Germany.

Mr. Noel D. Sheffield said that the class of men and women who might be called casual labourers seemed quite beyond any scheme for promoting their welfare. In many cases it was the occupier who made the slum, and even if persons of that type were shifted to a popular district amid healthy surroundings they would very soon convert the whole neighbourhood into a slum area.

Joint passages between the houses were economical, as they saved frontage without any apparent diminution of the front garden. He considered housing schemes must be to a large extent philanthropic, as few business or commercial men would spend large sums of money for a mere 2½ per cent. return.

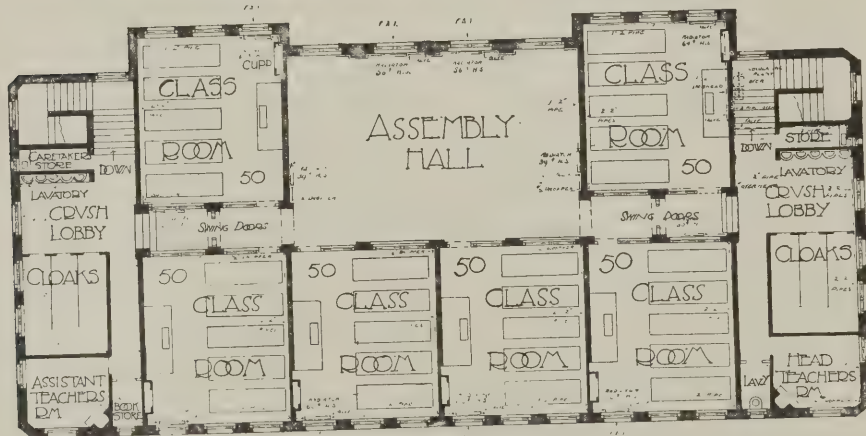
Mr. Charles F. Mitchell said he was glad that it was in the cottage rather than the block dwellings system that the solution of the housing problem lay, because in giving a man a house of his own with plenty of garden space and a common ground for the children they were giving him the joy of life.

Mr. F. Endell Rosser agreed with the lecturer in his advocacy of the parlour which he thought gave to the working man and woman a certain amount of self-respect. Wherever possible, he always put in a parlour. He saw no objection to a *cul-de-sac* under the conditions suggested, and thought a nice effect could be obtained by running the front garden through at the two end houses and placing a house at the other end facing down the *cul-de-sac*. A great saving in road charges would thereby be effected.

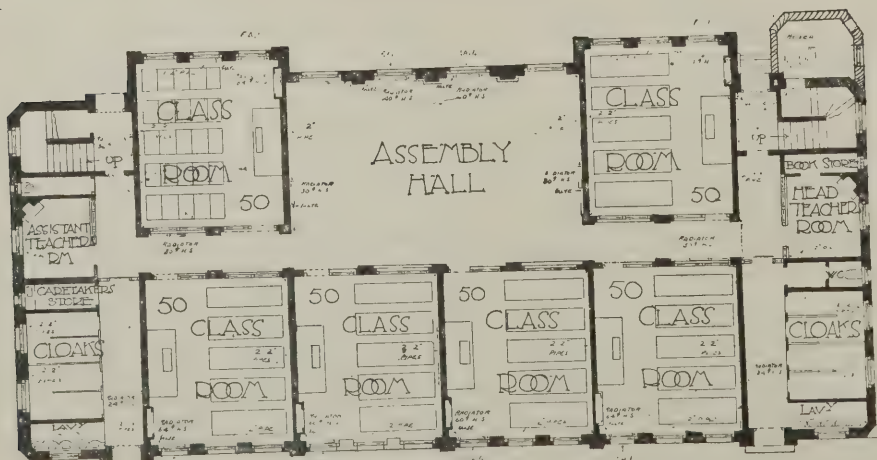
Alderman W. Thompson (Chairman of the National Housing and Town Planning Council) said that architects had only recently, comparatively speaking, turned their attention to the cheap house. He had never paid them to give the matter serious thought; the design of a cottage and the superintendence of its erection required as much care and trouble as larger work, and when it was completed the result of their efforts was often "lifted" by builders and others almost to the brick, without any kind of fee. If architects could devise some reasonable means, without putting any undue oppression upon the production of houses, which would protect a man who had given his life to the consideration of the subject, they would be justified in asking Parliament to accede to their demands. The present Act was not strong enough to get at the trouble. So far every house erected on their estate had been designed by a proper architect; every house would have to be examined by an architect, and they would insist upon having a competent man for every house put up. The average number of houses there to the acre was not more than six. The maximum number was twelve to the acre, and the opinion throughout the country seemed to be hardening on the question. The zoning system of streets radiating from a centre would have to be adopted where land was purchased which already had houses standing upon it. There could not be a slum anywhere within ten square miles of their estate, their neighbours benefiting by their scheme. On an estate 200 acres in extent, twenty acres were given up to open spaces.

Mr. Ewart G. Culpin (Secretary of the Garden Cities Association) said that it was a glad sign for housing reformers that architects were taking up the subject. They had all suffered so much from the deadly monotony of streets of houses erected from builders' plans, the cost of building and establishment charges being out of all proportion to the result obtained. He gave instances supporting his contention that without doubt it was evident that the cottage condition was going to be the salvation of the world.

Mr. Percy B. Tubbs, F.R.I.B., having made a few remarks, the motion was put and carried, and Mr. Monson replied.



First-Floor Plan.



Ground-Floor Plan.

FIRST-PREMIATED DESIGN FOR ELEMENTARY SCHOOL, WHITLEY BAY.
MARSHALL AND TWEEDY, ARCHITECTS.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

The L.C.C. Draft Regulations. In our issues for December 6th, 13th, and 27th, 1911, we published the proposed regulations with respect to the construction of buildings wholly or partly of reinforced concrete, as drafted by the Building Acts Committee of the London County Council. The chief object in publishing the draft must have been to elicit criticism, and no doubt this has been abundant enough. Probably much of it has been "forwarded to the proper quarter," and some of it has been published. "An Engineering Correspondent" of the "Times," for instance, has reviewed the draft with much acuteness, pointing out several particulars in which it seems to be in need of amendment. He admits that Part I. (see page 604 of our issue of December 6th) is a clearly expressed definition of what is meant by a reinforced concrete building, but he thinks that Clause 5 should be so modified as to enable the designer to combine steel framing and reinforced concrete in one building if he so desires. Whether or not he is correct in assuming that a strict reading of this clause would prevent that combination will, we think, be pretty clearly seen on a re-perusal of the clause, which is as follows: "5.—Nothing in these regulations shall be deemed to authorise the construction of buildings of reinforced concrete in which the loads and stresses are not transmitted through each storey to the foundations by a skeleton framework of reinforced concrete or partly by a skeleton framework of reinforced concrete and partly by a party wall or party walls." There is no mention of steel framing. Is the omission accidental, or intentional? A very slight modification of the clause would set the matter right.

Steel-frame Construction. But it is difficult to believe that the omission was accidental, seeing that the committee, when drafting the clause, probably had before them Clause 22 of the 1909 Act. Why did they not follow the wording of that Act more closely, accepting the gist of this passage?—"transmitted through each storey to the foundations by a skeleton framework of metal or partly by a skeleton framework of metal and partly by a party wall," etc. Unless the draft regulation is amended so as to include steel-frame construction by express provision, trouble is sure to arise, because the administration of the Act is sure to be strictly in accordance with its letter; and even though it may be possible to obtain occasional exemptions from the Council, that process is troublesome and apt to cause unnecessary anxiety and delay. The combination of reinforced concrete and steel-frame construction may, through some happy intention or other contingency, become much more desirable; and yet here is a use of the draft that seems tacitly to prohibit it—for what reason, if any, is difficult to conjecture.

Wind-pressure. The clauses relating to wind-pressure are of such a character as to inspire regret that the authors of such documents cannot be

asked to expound their reasons. Clause 20 of the 1909 Act provides that: "All buildings shall be so designed as to resist safely a wind-pressure in any horizontal direction of not less than thirty pounds per square foot of the upper two-thirds of the surface of such buildings exposed to wind-pressure. In the new draft regulations, the clauses relating to wind pressure are as follows: "18a.—All buildings shall be so designed as to resist safely a wind pressure in any horizontal direction of not less than twenty pounds per square foot of the whole projected surface normal to the direction of the wind. 18b.—All structures or attachments whatsoever in connection with a building, including towers or other parts which extend above the flat roof or gutter adjoining thereto, shall be so designed as to resist safely a wind pressure in any horizontal direction of not less than forty pounds per square foot of the whole projected surface normal to the direction of the wind." Clause 107 of the draft provides that: "Each panel in any external wall shall be designed to resist safely a horizontal pressure of at least thirty pounds per square foot assumed to be acting uniformly over the area of one panel from either side." Is all this complication necessary? It is surely confusing to remember that, while in the 1909 Act there is a generalisation on 30 lbs., in the draft one gets 20 lbs. as a generalisation, with 40 lbs. and 30 lbs. for particular circumstances, and it ought to be possible to simplify the rule. One would like to know upon what meteorological data the calculations for wind-pressure are currently based. Those given in the text-books on building seem to be somewhat ancient, and it may be doubted whether the accepted figures for wind-pressure—storm, 12½ lbs. per square foot; violent storm, 18 lbs.; hurricane, 32 lbs.; violent hurricane, 50 lbs.; gust in 1866, 80 lbs.—are not in need of revision. Also, there is wisdom in the commonplace that while in most situations a pressure of 40 lb. per foot super. of the surface exposed to its action may be assumed as the maximum, yet in exposed situations a higher value, of 50, 56, or even 60 should be allowed. It is a matter that is ripe for close scrutiny.

Superfluous Formulae.

The critic under notice deprecates as being superfluous the introduction of formulae into the draft, and with regard to the following: "Bending moment at the fixed end of a cantilever with the load uniformly distributed = $Wl^2/2$," he grows sarcastic: "It seems odd that a regulation of the London County Council should be needed to confirm a law of Nature; although it may be admitted that if complex formulae are to become regulations it would be only logical to lead up from the one quoted above; perhaps we ought to begin with 'twice two is four.'" There is justness also in the remark provoked by the minute directions as to maximum distance between bars, thickness of covering concrete, jointing of bars, fishtailing of ends, grip length, shear reinforcement, etc.—i.e., that the description might with advantage be considerably condensed: "What is required is regulations, and not

specifications." Other points noted are that the tables of working stresses show, in some cases, higher figures than those in the R.I.B.A. rules, and might lead to the district surveyor's insisting on testing-loads that would crack the concrete; that the compressive working stresses seem to involve too small a factor of safety; and that the test loads in some instances tend to run to extremes. It will be interesting and perhaps instructive to compare the L.C.C. draft with the regulations that have just come into force in New York city, and, accordingly, the latter are printed in another part of the present issue.

The Aesthetic Side.

Our remark, in last month's Concrete and Steel Section, that the long interval between the reading of the paper by Professor Berestord Pite on "The Aesthetic Treatment of Concrete" in June last, and the resumption of the discussion upon it on February 8th, might render its details, if not its main argument, a somewhat dim memory, has been confirmed by the event. On the resumption, Professor Pite very obligingly read his paper again, and showed a series of lantern slides of reinforced concrete buildings. It must be confessed that the discussion left the problem pretty much where it was. Most of the speakers seeking refuge in the rather vague generalities which beset such subjects. One speaker thought that concrete need not be treated with coarseness, but should be treated with the highest degree of refinement. Another, that in architecture the effect of beauty ought to be attained; and so forth. Mr. Arthur T. Bolton, F.R.I.B.A., recalled the remark of Garbett, written at about the time of the Gothic revival, that "In Greece we have the architecture of the post and lintel, and in Rome we have the architecture of the arch, and there is no other constructive principle except that of the truss." Garbett could not have foreseen the significance that the truss was destined to assume in the development of reinforced concrete construction. Mr. Bolton seemed to suppose that the ceiling of the cold-water bath of Caracalla at Rome, where great quantities of T-irons had been found, might have been constructed on some system akin to reinforced concrete; while the roof of the Pantheon had some extraordinary truss construction of flat bars of bronze: which was all very interesting, but did not very plangently hit the chief point under discussion. Mr. E. P. Wells was more direct. He did not see why the usual methods of moulding and treatment should not apply to reinforced concrete, which, he seemed to complain, was somewhat unfairly condemned as an artificial material, whilst in fact it was no more artificial than brick, against which no similar prejudice is ever expressed. The one definite suggestion of the discussion came from a gentleman who thought that the early Greek example of the Colossus, where a great wall of burnt brick was plastered over, and large figures were moulded in the plaster, might possibly offer a hint for the decorative treatment of reinforced concrete. On the whole, the discussion was disappointing.



RECREATION HALL, SOUTHALL. A. G. R. MACKENZIE, A.R.I.B.A., ARCHITECT.



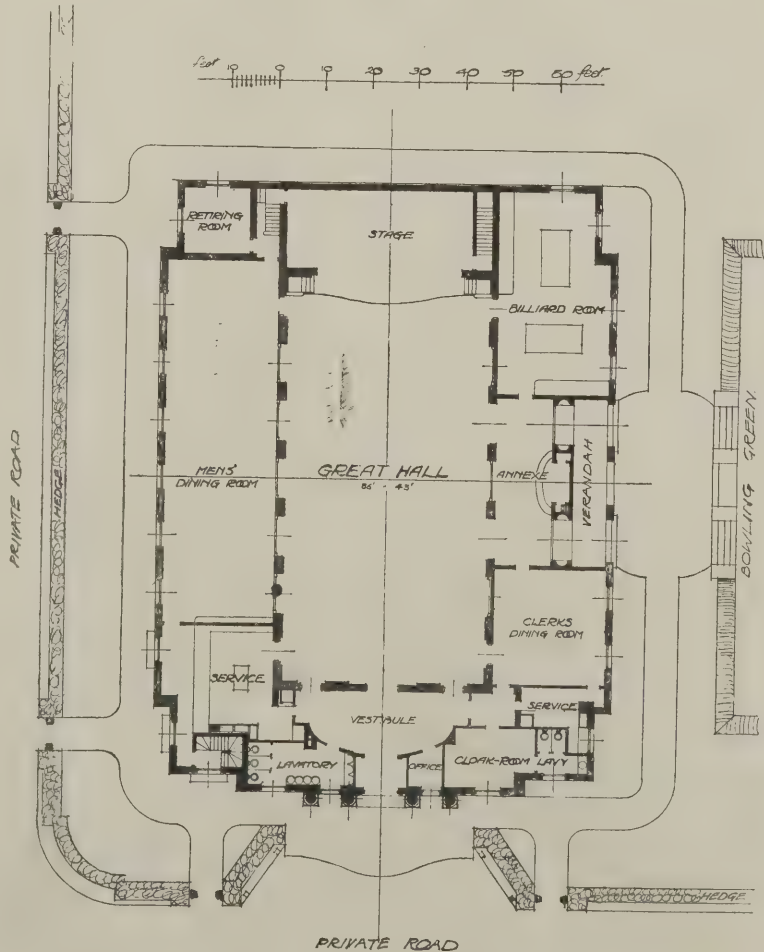
RECREATION HALL, SOUTHALL A. G. R. MACKENZIE, A.R.I.B.A. ARCHITECT

NEW RECREATION HALL, SOUTHALL.

This building was designed by Mr. A. G. R. Mackenzie, A.R.I.B.A. (of A. Marshall Mackenzie and Son, 1, Victoria Street, Westminster), for Messrs. Otto Monsted, Ltd., margarine manufacturers, as a recreation hall for their employees. The exterior is designed in a Danish style of architecture, contemporary with that of Louis XVI., in France. The building contains a large hall, 86 ft. by 43 ft., laid for roller skating, and having a stage at one end. Grouped around are a men's dining-room, billiard-room, clerks' dining-room, services, cloak-rooms, etc., the kitchens and caretaker's apartments being on the first floor. The building is of brick covered with cement plaster, the dressings to the windows and doors being of Dumfries stone. The roofs are covered with black Dutch pantiles, supplied by Messrs. Roberts, Adlard and Co., of 26, Bermondsey Wall, S.E. The two small reinforced-concrete chimneys which are just visible in the exterior illustrations, and of which a detailed drawing is also reproduced, were erected by the Indented Bar and Concrete Engineering Co., Ltd., of Queen Anne's Chambers, Westminster. An interesting point in connection with their design is that the flat concrete slab from which the chimney springs is used as a base to afford stability to the reinforced concrete chimney against overturning. The roof to the recreation hall, also of reinforced concrete, is intended for use as a stand for spectators. Of this a plan and sections are given on page 232. The builders were Messrs. A. and B. Hanson, of Southall.

proofing compounds a high degree of impermeability, it is stated, may be obtained, and in the cities of Cologne and Stettin, which require an absolute impermeability under a pressure of about 9 lb. per square inch, or an equivalent head of about 20 ft., concrete pipes are said to give entire satisfaction. In the observed cases of leakage or fracture of these pipes, it was found that failure resulted either from improper plugging

of the joints or from such contributing conditions as would have caused a similar failure in cast iron or clay pipes. The author states that special care is necessary in the selection of the materials used in the manufacture of these pipes, particularly in the choice of the sand. As a result of tests conducted by the Corps des Ponts et Chaussées, the author believes that any high-grade Portland or slag cement may be used. The latter



RECREATION HALL, SOUTHALL: GROUND-FLOOR PLAN.

CONCRETE WATER MAINS.

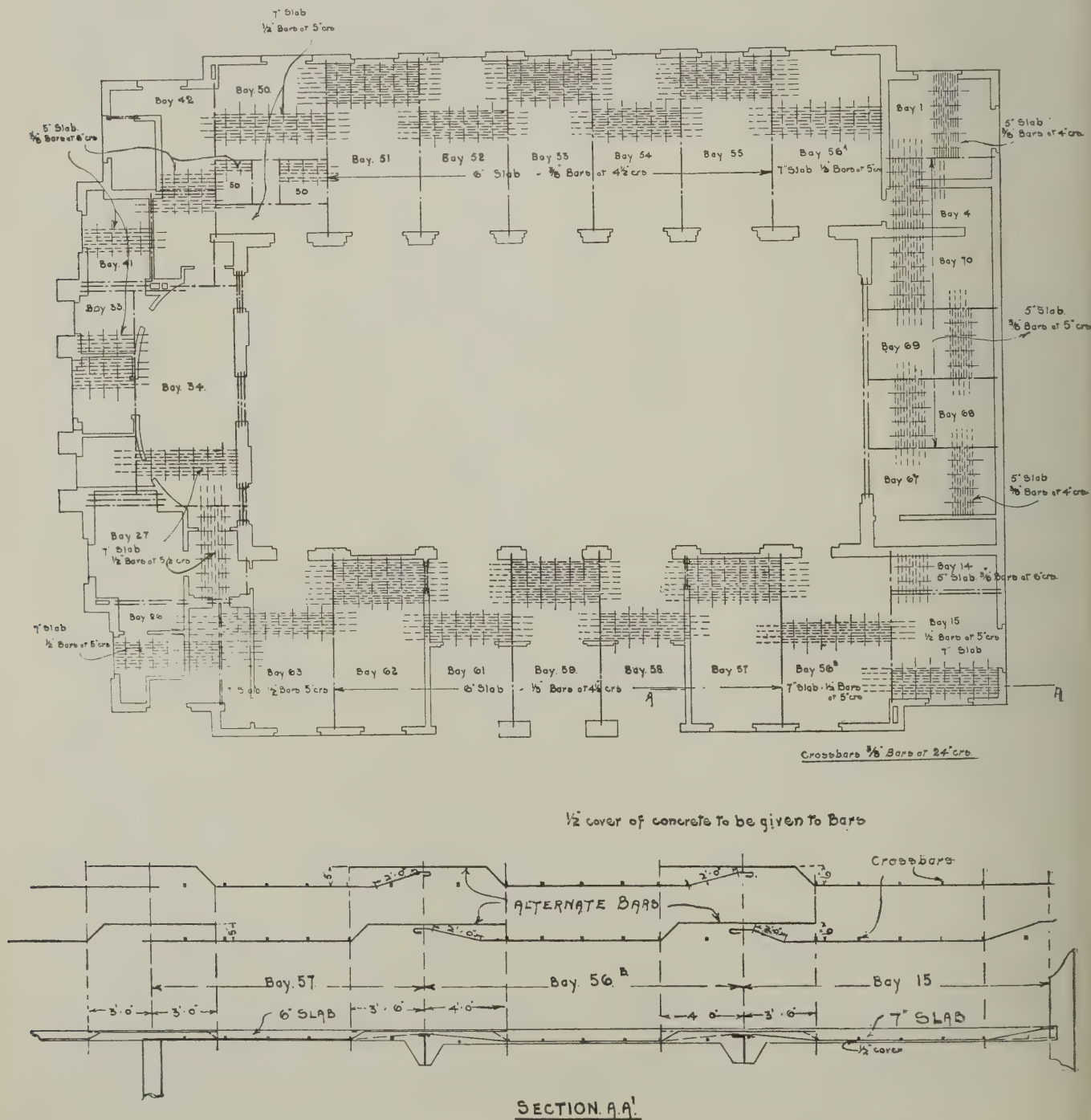
The use of water pipes made of concrete for municipal water supplies is discussed by M. E. Bazin in a recent issue of "Nouvelles Annales de la Construction." He notes their adaptability for carrying waters either neutral or low in acid or alkali, and under low pressures. Such pipes do not affect the taste of the water passing through them, and, it is stated, afford little if any opportunity for the development of vegetable organisms on the inside surface. By the use of water-

is said to be of special value on account of its behaviour under water or in wet ground. Under such conditions it is said to acquire a strength greater than that of Portland in a short period of time. The chemical and mineralogical composition of the sand should be investigated before a selection is made. Sand that is friable or contains soluble substances such as gypsum or salts of magnesium is not suitable. For these reasons argillaceous and calcareous sands are to be avoided, thus practically limiting the choice to siliceous sands. Of these, river sand is preferable to sea sand. If the latter is selected, it should be thoroughly washed before using it in the concrete. The author emphasises the necessity of using the same precautions in the selection of the gravel, and suggests the need of a careful study of proportions to secure uniformity.

REINFORCED CONCRETE POLES.

It is confidently asserted that wooden telegraph poles will soon be a thing of the past in New Zealand, and that in the future they will give place to the more durable poles made of reinforced concrete. These poles, being uniform in design, will present a more pleasing appearance to the eyes than do the wooden poles, which are rough-looking and decidedly disfiguring to the streets in which they are placed. The department found that the concrete poles are superior to wood or iron poles in every respect. For more than a year, experiments have been carried on for the department, with the object of making a concrete pole that would be much lighter than those made from the ordinary reinforced concrete. The experiments have been most successful. By

a chemical process poles can now be manufactured which are very little heavier than totara wood. Tests recently made with an 18 ft. pole showed that it could carry a greater weight than either wood or iron. Although the hollow in the reinforced-concrete poles materially reduced the weight, they were not nearly so light as the poles made with the new material. The average life of a wooden or iron pole is set down at about nine years, while it is considered that the reinforced-concrete poles and those chemically treated are practically everlasting. It is now the intention of the Post and Telegraph Department to have pillar boxes constructed of reinforced concrete chemically mixed, instead of the iron boxes now in use. Tests show that these boxes are stronger and lighter than iron, while the cost is said to be only half.



RECREATION HALL, SOUTHALL. ROOF-FLOOR PLAN, AND SECTION SHOWING REINFORCEMENT.

NEW YORK'S NEW REGULATIONS FOR REINFORCED CONCRETE CONSTRUCTION.

As noted in another part of the present issue, it will be interesting, at the moment when the London County Council is formulating new rules for the regulation of reinforced concrete construction, to compare these with those that have been adopted by the Superintendents of Buildings in the five boroughs of the City of New York, and that came into operation at the beginning of the present year:—

1. The term reinforced concrete in these regulations shall be understood to mean an approved concrete mixture reinforced by steel of any shape.

2. Reinforced concrete will be approved for all types of construction if the design is in accordance with good engineering practice and stresses are figured as required by these regulations.

3. Before permission to erect any reinforced concrete structure is granted, complete drawings and specifications must be filed with the superintendent of buildings, showing all details of the construction, the size and position of steel reinforcement, and the composition of the concrete.

4. The concrete for reinforced concrete structures shall consist of a wet mixture of 1 part of cement to not more than 6 parts of aggregate, fine and coarse, either in the proportion of 1 part of cement, 2 parts of sand, and 4 parts of stone or gravel, or in such proportion that the resistance of the concrete to crushing shall not be less than 2,400 lb. per sq. in. after hardening for 28 days.

5. Only Portland cement meeting the standard specifications for cement of the American Society for Testing Materials shall be used in reinforced concrete structures.

6. Fine aggregates shall consist of sand, crushed stone or gravel screenings, passing when dry a screen having $\frac{1}{4}$ -in. diameter holes, and not more than 6 per cent. passing a sieve having 100 meshes per lineal inch. It shall be clean and free from vegetable loam or other deleterious matter.

7. Mortars composed of 1 part Portland cement and 3 parts fine aggregate by weight when made into briquettes should show a tensile strength of at least 240 lb. per sq. in. at 28 days.

8. Coarser aggregate shall consist of crushed stone or gravel which is retained on a screen having $\frac{1}{4}$ -in. diameter holes and graded in size from small to large particles. The maximum size shall be such that all the aggregate will pass through a 1-in. diameter ring. The particles shall be clean, hard, durable, and free from all deleterious material.

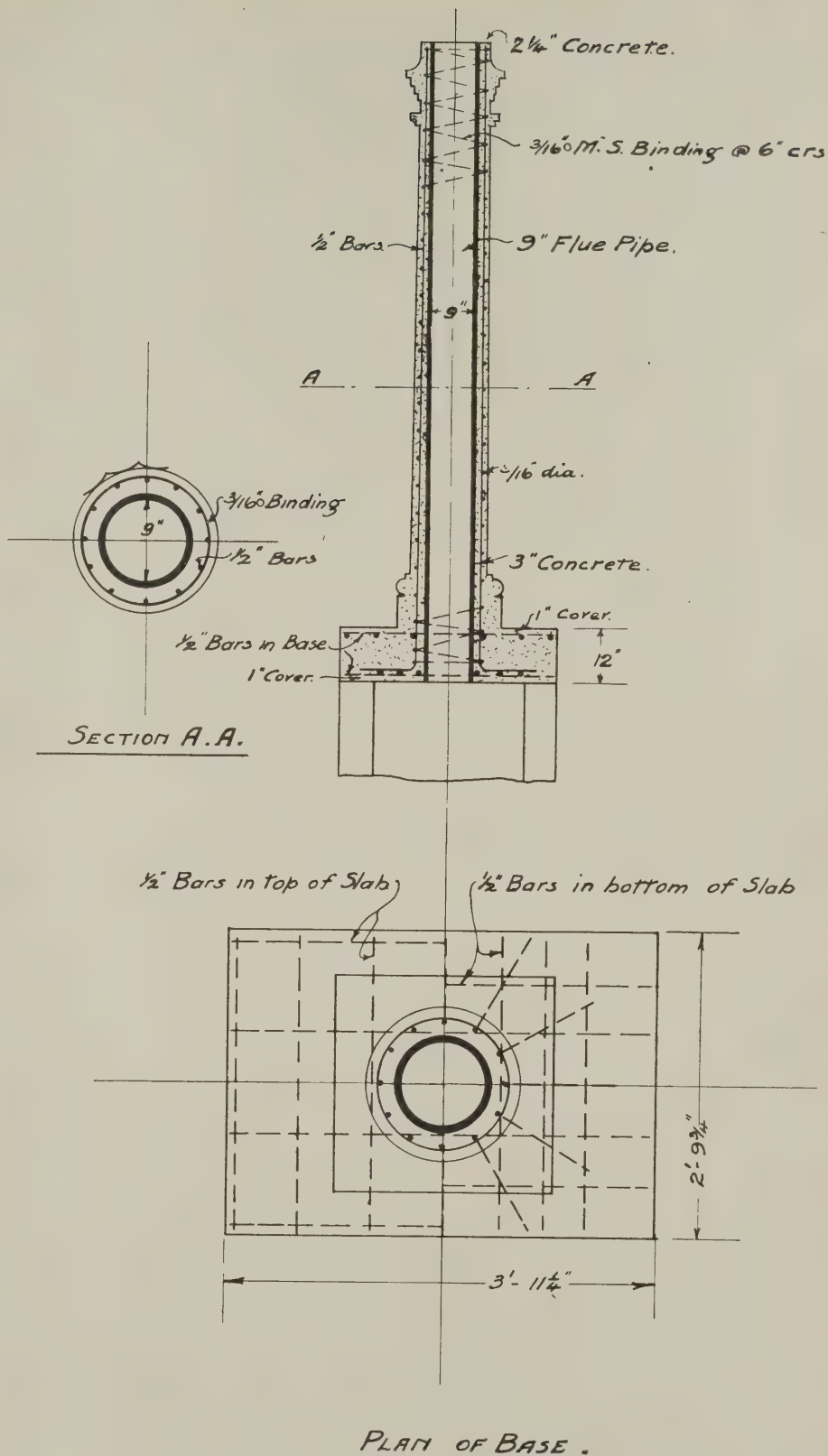
9. Steel for reinforcement of concrete shall meet the requirements of the standard specifications for steel reinforcement of the American Railway Engineering Association.

10. Wire used for column hoops shall be drawn from open hearth billets and shall have an ultimate tensile strength of not less than 85,000 lb. per sq. in.

11. The span length for beams and slabs shall be taken as the distance from centre to centre of supports, but need not be taken to exceed the clear span plus the depth of beam or slab. Brackets shall not be considered as reducing the clear span.

12. Length of columns shall be taken as the maximum unsupported length.

13. All reinforcement shall be accurately located and secured against displacement.



REINFORCED CONCRETE CHIMNEY AT RECREATION HALL, SOUTHALL.

ment. The reinforcement for slabs shall not be spaced further apart than two and one-half times the thickness of the slab.

14. Slabs shall not be less than 4 in. in thickness for floors and $3\frac{1}{2}$ in. for roofs.

15. As a basis for calculations for the strength of girders, beams, and slabs the following assumptions shall be made.

(a) A plane section before bending remains a plane after bending.

(b) The modulus of elasticity of con-

crete in compression remains constant within limits of working stresses fixed in these regulations.

(c) The adhesion between concrete and reinforcement is perfect.

(d) The ratio of the modulus of elasticity of steel to the modulus of elasticity of concrete is 15.

(e) Concrete has no value in resistance to tension.

(f) Initial stress in the reinforcement due to contraction or expansion in the concrete is negligible.

16. The bending moment of slabs uniformly loaded and simply supported shall be taken as $Wl/8$, where W =total load and l =span.

17. The bending moments at the centre and at intermediate supports of floor slabs continuous over two or more supports shall be taken as $Wl/12$.

18. The bending moments of slabs that are reinforced in both directions and supported on four sides and fully reinforced over the supports (the reinforcement passing into the adjoining slabs) may be taken as Wl/F for loads in each direction, in which $F=S$ when the slab under consideration is not continuous or when continuous over one support, and $F=12$ at both centre and supports when the slab is continuous over both supports. The distribution of the loads shall be determined by the formula

$$r=l^4/(l^4+b^4)$$

in which r equals proportion of load carried by the transverse reinforcement, l equals length, and b equals breadth of slab.

19. Simply supported beams shall be considered as simple beams with bending moments of $Wl/8$.

20. Beams supported at one end and continuous at the other shall be considered as partially restrained with a bending moment of $Wl/10$ at the centre and $Wl/8$ over intermediate support.

21. Beams supporting rectangular slabs reinforced in both directions shall be assumed to take the proportions of load as determined by the formula in section 18.

22. The bending moments at centre and support for beams or girders continuous over two or more supports shall be taken at $Wl/12$.

23. The bending moments due to other than uniformly distributed loads shall be computed according to accepted theory.

24. Where adequate bond between slab and web of beam is provided, the slab may be considered as an integral part of the beam provided its effective width shall not exceed on either side of the beam one-sixth of the span length of the beam nor be greater than six times the thickness of the slab on either side of the beam, the measurements being taken from edge of web.

25. Members of web reinforcement shall be so designed as to adequately take up all involved stresses throughout their entire length. They shall not be spaced to exceed three-fourths of the depth of the beam in that portion where the web stresses exceed the allowable value of concrete in shear. Web reinforcement, unless rigidly attached, shall be placed at right angles to the axis of the beam and carried around the extreme tension member.

26. Reinforced concrete structures shall be so designated that the stresses in the concrete and steel shall not exceed the following limits.

	Per sq. in.
Extreme fibre stresses on concrete in compression ..	650 lb.
Concrete in direct compression ..	500 lb.
Shearing stress in concrete when all diagonal tension is resisted by steel	150 lb.
Shearing stress in concrete when diagonal tension is not resisted by steel	40 lb.
Bond stress between concrete and reinforcing bars ..	80 lb.
Tensile stress in steel reinforcement	16,000 lb.

Tensile stress in cold drawn steel wire used as column hoops 20,000 lb.

In continuous beams the extreme fibre stress on concrete in compression may be increased 15 per cent. adjacent to supports.

27. Axial compression in columns without hoops, bands, or spirals, and with not less than one half nor more than four per cent. of vertical reinforcement secured against lateral displacement by steel ties placed not farther apart than 15 diameters of the rods nor more than 12 in. shall not exceed 500 lb. per sq. in. on the concrete nor 6,000 lb. per sq. in. on the vertical reinforcement.

28. Axial compression in columns with not less than one per cent. of hoops or spirals spaced not farther apart than one-sixth of the diameter of enclosed column and in no case more than 3 in., and with not less than one nor more than four per cent. of vertical reinforcement, shall not exceed 725 lb. per sq. in. on the concrete within the hoops or spirals nor 8,700 lb. per sq. in. on the vertical reinforcement.

29. Axial compression in structural steel columns thoroughly encased in concrete having a minimum thickness of four inches and reinforced with not less than one per cent. of hoops or spirals spaced not more than twelve inches apart may be taken at 16,000 lb. per sq. in. on the net section of the structural steel, no allowance being made for the concrete casing. The hoops or spirals of the concrete casing shall be placed not nearer than 1 in. from the structural steel or the outer surface of the concrete. The ratio of length to least radius of gyration of the structural steel section shall not exceed 120.

30. In reinforced concrete columns the compression on the concrete may be increased 20 per cent. when the fine and coarse aggregates are carefully selected and the proportion of cement to total aggregate is increased to one part of cement to not more than four and one-half parts of aggregate, fine and coarse, either in proportion of 1 part of cement, 1½ parts of sand, and 3 parts of stone or gravel, or in such proportion as will secure the maximum density.

31. The vertical steel bars in reinforced concrete columns shall bear squarely on steel plates or castings bedded on top of the footings.

32. Bending stresses due to eccentric loads shall be provided for by increasing the section of concrete or steel until the maximum stress shall not exceed the allowable working stress.

33. Whenever it is necessary to splice bars, the connections between them shall be of sufficient strength to carry the stress.

34. In columns, the splicing of longitudinal bars having an area less than 1¼ sq. in. may be done by lapping, the lapped bars to be wired securely to each other. Longitudinals having areas in excess of 1¼ sq. in. shall be spliced by butting the bars squarely one over the other and tying the same securely together by some mechanical means that will not utilise the adhesive strength of the concrete. All such splices shall be made above floor levels, but not more than 12 in. above the same.

35. In columns the ratio of length to least side or diameter shall not exceed fifteen, but in no case shall the least side or diameter be less than 12 in.

36. The concrete members of floor construction in which hollow tiles, concrete blocks, or other fillers are used, in combination with reinforced concrete, shall be designed in accordance with these regulations, except that the slab portion cast on top of the fillers may have a minimum thickness of 2½ in. provided the fillers do not exceed 60 per cent. of the construction.

37. Exterior and interior bearing and enclosure walls of reinforced concrete supporting floor and roof loads shall be securely anchored at all floors, and of such thickness that the compressive stress shall not exceed 250 lb. per sq. in., but in no case less than 8 in. The thickness shall not be less than one-twentieth of the unsupported height. Steel reinforcement shall be placed near both faces of the wall, running both horizontally and vertically and weighing not less than ½ lb. per sq. foot of wall.

38. Footings for walls and columns may be constructed of reinforced concrete provided the working stresses for concrete and steel are not exceeded and the steel is protected by at least 4 in. of concrete.

39. The steel reinforcement in columns and girders shall be protected by a minimum of 2 in. of concrete; in beams and walls by a minimum of 1½ in.; and in floor slabs by a minimum of 1 in. of concrete.

40. The contractor may be required to make load tests on any portion of a reinforced concrete structure within the reasonable time after erection. The test shall be made under the direction of the Superintendent of Buildings, and shall show that the construction will sustain safely a load of twice the live load for which it was designed.

41. These regulations do not apply to any construction for which provision is otherwise made in the building code.

THE CHEMISTRY OF CEMENT.

With Mr. Bertram Blount's lecture on cement, which were delivered at King's College, London, on October 26th and December 1st, 1911, the Institute of Chemistry inaugurated a scheme under which Fellows who have special knowledge and experience in various branches of work are engaged to deliver lectures chiefly for the benefit of young chemists and advanced students; the object being to indicate the scope and character of the work actually carried out in various branches of professional practice distinct from purely academic training. The lecturer's opportunities of usefulness are greatly increased, although possibly the number of his actual auditors may be thereby to some extent diminished by the publication of the lectures in pamphlet form, with free distribution to Fellows, Associates, and registered students, and sale for half a crown to outsiders; but while many who obtain the books will not go to the lectures all who attend the lectures will be glad to have the books, supposing that these are at all comparable in value and importance to the one under notice. It will be found useful by all who desire to obtain—what in these days is essential to a thorough understanding of the subject—without overmuch effort or expense, a good groundwork of scientific appreciation of the properties of cement as ascertained by the methods of chemistry. Diagrams are appended.

Lectures on Cement. By Bertram Blount, F.I.C. London: The Institute of Chemistry of Great Britain and Ireland, 30, Bloomsbury Square, W.C. Price 2s. 6d.

DOVER HARBOUR IMPROVEMENTS.

The scheme for the improvement of the cross-Channel traffic facilities at Dover takes the form of a reclamation on the east side of the old Admiralty Pier as originally proposed twenty years ago. The scheme is essentially a widening of the Admiralty Pier between the shore and the turret at the seaward end of the old Pier. The maximum length of the reclamation is some 2,300 ft., with a maximum width in the curve of the Admiralty Pier of 350 ft., the width varying by reason of the fact that the seaward side of the reclamation is being constructed on a much flatter curve than that of the Admiralty Pier itself. The reclamation has been carried out by constructing a sea face in huge concrete blocks, set by divers in a foundation levelled in the chalk of the sea-bed, and filling in the space between the new wall and the pier; the filling-in operations require the use of about 1,000,000 cubic yds. of material, which is being furnished from an excavation in the east cliff at Dover where a new road is being constructed. Over the greater part of the area which has been reclaimed there is an ample depth of water, ranging up to 40 ft., and dredging operations have been necessary only at the shore end of the reclaimed site, the intention being to provide a minimum depth of water of 16 ft. at low water of spring tides. The reclamation is being carried out by the Dover Harbour Board, according to plans prepared by their engineer, Mr. A. T. Walmisley, and the site thus created is being leased to the railway company for the purposes of the new marine station.

By the coming summer the new sea wall, which will extend from the Lord Warden Hotel to near the turret, will have been finished. A part of the site has already been rendered available for the preliminary operations for the erection of the station itself, and a contract has been entered into between the South-Eastern and Chatham Railway and Messrs. S. Pearson and Son for the construction of the foundations.

Owing to the new structure having to be built on made ground, it became necessary to consider the best means of carrying it, so as to avoid future settlements; and it was ultimately decided to adopt a system of piled foundations, the piles being driven through the filling to the old sea bed beneath, and their heads connected together by reinforced concrete slabs and beams on which the new buildings could rest. Nearly 1,200 piles will be required for the purpose, and these are being made of reinforced concrete on the Considère system. A few have already been driven, and the driving of the remainder will be proceeded with as the filling progresses.

Steps are being taken by the railway company to arrange for the erection of the station to follow on the putting-in of the foundations, so that no time may be lost, and it is their intention shortly to invite tenders for the necessary steel-work and roof covering, and subsequently for the masonry, brickwork, etc., that will be required. The arrangement of the station, which is being designed by Mr. P. C. Tempest, the engineer of the South-Eastern and Chatham Railway Company, will comprise two platforms each 50 ft. wide, and about 700 ft. long, on each side of which trains can be accommodated, so that there will be room for four trains

in the station simultaneously. Waiting and refreshment rooms will be provided, and also facilities for Post Office business.

The cost of the reclamation scheme is about £400,000, and the work which is to be carried out by the railway company will probably bring the cost of the whole improvement up to a total of about £500,000.

MICA SURFACING FOR CONCRETE.

Ground mica is being used extensively for surfacing concrete work. It is said to have proved very effective for this purpose, as it gives an artistic finish to the work and adds life and sparkle to the surface, taking away the flat dead appearance that is common to concrete. About 5 lb. of mica is sufficient to cover 100 sq. ft. The electric light columns in Lincoln Park, Chicago, Illinois, were created in this way, crushed red granite being used so that the finished surface had the appearance of polished granite. The granite and mica surfacing material was applied to the inner surface of the square iron trough in which that part of the columns extending above the ground was cast. When the trough was filled, the top or lid was screwed down, pressing the concrete into all the lines and corners of the mould. After the cement had set perfectly, part of the mould was removed to permit the post to cure more rapidly. The post was not removed from the mould until it had set for 24 hours at least. After it was perfectly dry the surface was scrubbed with muriatic acid to remove the cement on the outer face of the granite and mica and leave a clean surface closely resembling that of granite.

RELATIVE MODULI OF ELASTICITY.

Commenting, in a Glasgow newspaper, upon a new departure in constructional methods that has been devised by Mr. Robert Thomson, architect, Glasgow, another architect criticised the method proposed for supplementing the strength of an existing cast-iron column on the alleged ground that "cast iron, being an inelastic material, would continue to carry the whole of the load until its crushing point was reached, when the whole load would be immediately transferred to the reinforcement." The critic proceeded to say—"If, however, the material reinforced in this manner had been steel or wrought iron (elastic materials) the reinforcing materials would have become active immediately the sectional area increased or tended to do so."

In reply to this criticism, Mr. John Sharp, Wh.Sc., M.Inst.C.E., writes: "The critic thus admits that had the columns referred to been of wrought iron or steel instead of cast iron, the encasing concrete anchored thereto would have immediately become effective, both in supplementing and in reinforcing the strength of the column, because of the elastic properties of the encased material. If, therefore, it can be shown that cast iron behaves in a similar manner to wrought iron and steel, in shortening under compressive loading, and that it has elastic properties similar to these materials, although certainly not to the same extent, the critic must perforce include cast iron with wrought iron and steel, and thus admit the soundness and efficiency of Mr. Thomson's method."

"From a long experience in working and testing cast iron, wrought iron, and steel, it would be easy to satisfy the critic regarding the elastic properties of cast iron; but it will be interesting," Mr. Sharp thinks, "to refer to the highest recognised authority on the subject. I therefore suggest that those interested should consult Professor Unwin's book on 'The Testing of Materials of Construction' (1899 edition). In this book they will find the stress strain diagrams of cast iron and steel alongside each other. From these it will be seen that the shortening of cast iron under compressive loading is nearly twice as great as that of steel, and that therefore the concrete encasing a cast-iron core must of necessity actually take a greater portion of the load than it would were the core of steel or wrought iron. The relative stress and strain in the metal and reinforcement depend on the relative moduli of elasticity and the proportions of the materials employed."

LEGAL.

A Question of Soil-Pipes.

At Marylebone Police Court Mr. White, chairman of the London County Council, was summoned by the borough council for putting into his house at 21, Upper Berkeley Street, W., a soil-pipe which was not all lead.—Mr. Freke Palmer said that the proceedings were taken under by-laws of the London County Council.—Mr. White said he was very angry at being dragged into a criminal court. He had been marked out by the borough council because of the position he held.—Dr. Porter, medical officer, replied that several other offenders in the same way had been compelled to substitute lead for iron soil-pipes.—Mr. White complained that he had also been robbed of his right of appeal to the committee of the London County Council, of which he was chairman.—Mr. Plowden thought the soil-pipe was half inside and half outside the house, and there was nothing in the by-law which provided for such a pipe. It was really a drawn battle. Each side was right, and each was wrong; and Mr. White left the court without a stain on his character. He was fined a nominal penalty of 10s. for not having deposited the plans with the borough council.

Liability for Accident.

In the King's Bench Division last week, before Mr. Justice Coleridge and a special jury, an action was tried in which Mr. Alfred Goulton Padbury, a commercial traveller, sought to obtain from Messrs. Holliday and Greenwood, builders, of Brixton, damages for personal injuries. It appeared that on January 4th, 1911, plaintiff, while passing a building that was in course of erection in Fenchurch Street, London, was struck on the head by an iron cramp that fell from the third floor. For eight months he had been unable to follow his occupation, and his memory and eyesight had been seriously and, it was feared, permanently impaired.—Defendants denied liability, and urged that the cramp was dropped by the employee of a firm of sub-contractors, for whose accidents the defendant firm were not responsible, and in whose selection for the work they had no choice.—The jury, however, awarded plaintiff £500 damages.—Judgment accordingly, with conditional stay of execution pending a possible appeal.

OBITUARY.

Alexander Graham, F.S.A., F.R.I.B.A.

Mr. Alexander Graham, whose death we greatly regret to announce, was for ten years (1899-1909) hon. secretary of the Royal Institute of British Architects, of which body he was vice-president from 1893 to 1897. He was the architect of the Sandlebridge Colony for Epileptics, Cheshire, which cost about £60,000, and noteworthy among his numerous works are the Montreal General Hospital; warehouses for Welch, Margetson, and Co., in Moor Lane; Law Guarantee Society's buildings at Buckingham Gate; and the Armourers' Company's premises in Drapers' Gardens, E.C. Of late years he was frequently appointed assessor in competitions; and his water-colour drawings showed an unusual degree of accomplishment.

At the R.I.B.A. meeting on February 10th, the hon. secretary, Mr. Henry T. Hare, read the following letter from Sir Wm. Emerson:—

"19th Feb., 1912.

"DEAR MR. PRESIDENT,—I very much regret my inability to be at the meeting this evening to express as I would wish my own personal sense of loss at the passing away of our old friend Alexander Graham, and to join in the tribute of respect and esteem that will be paid him, not only by his former colleagues on the Council, but by the numerous body of members who knew and appreciated his sterling qualities.

"A steadfast supporter of the Institute, he was from the first one of the most active and zealous of its workers. During my term of office as Member of Council, as Hon. Secretary, and afterwards as President, I had frequent opportunities of observing the high-mindedness and disinterestedness he displayed in all that he did for the Institute. A man of the strictest probity and integrity, he placed the honour of the profession and the well-being of the Institute before everything; to preserve the one and secure the other he would count no personal sacrifice too great.

"Mr. Graham, when he was elected Hon. Secretary, must have been nearly approaching his threescore years and ten, and though at that age his conservative tendencies were somewhat strongly pro-

nounced, he was never intolerant of the views of those who differed from him. As I remember him at the Council meetings, he spoke but seldom; and if he was a little lacking in initiative when some necessary movement was in question, when once a course of action was decided upon, he would devote himself to the work expected of him with all the zeal and thoroughness of one many years his junior.

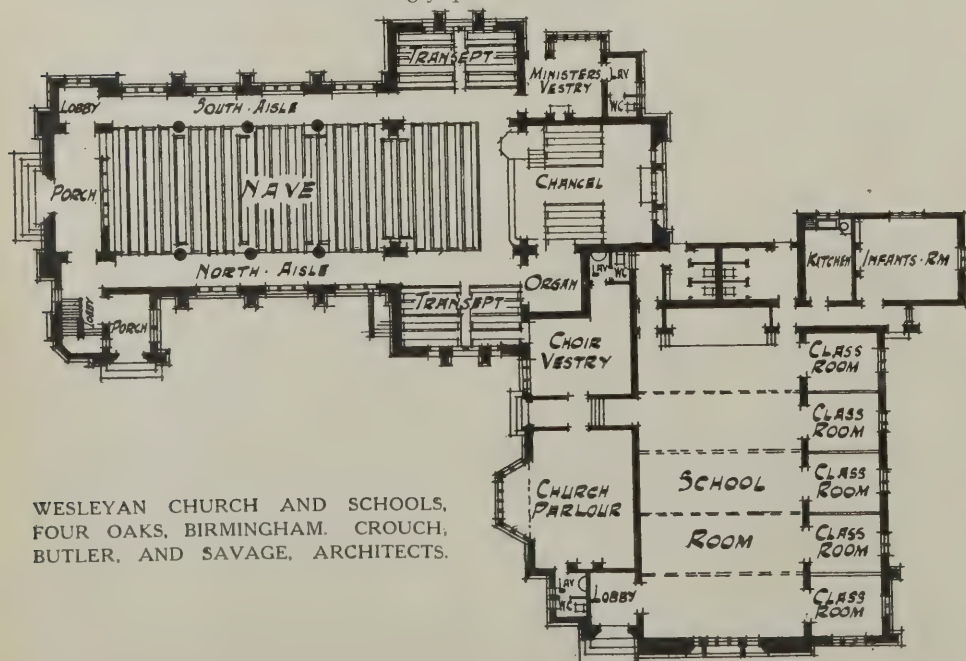
"His courtesy and urbanity of manners were familiar to us all; no one could discharge with greater distinction the various public and social functions that fall to the lot of the Honorary Secretary of the Institute. He was true and sincere in his friendships, ever sympathetic and warm-hearted, and one of the cheeriest and most agreeable of companions. I know personally that not a few young architects have cause to be grateful to him for his kindly advice and assistance.

"For myself I deeply deplore his removal from us, and beg to be permitted to associate myself in the resolution to be moved this evening recording our sorrow at the loss we have sustained and our sympathy with his relatives.—Yours faithfully,
"WM. EMERSON."

OUR PLATE.

Wesleyan Church and Schools, Four Oaks, Birmingham.

This church is built on an excellent site at the junction of the Lichfield and Walsall Roads. The nave was erected some five years ago; and the whole scheme, including schools and caretaker's rooms, has now been completed. The church consists of nave, transepts, choir, and organ chamber, with a gallery over the western porch. A lofty tower marks the crossing. The pulpit and the fittings generally are of oak, carried out to the architects' own designs. The east window, representing Christ blessing little children, is by Messrs. Harvey and Ashby, of Birmingham. The stone used was from Weldon, Northamptonshire, except that for the piers, which is grey Forest of Dean. The roofs are covered with Colley Weston stone shingles. The adjoining school buildings consist of assembly hall, church parlour, and infants' room. The total cost has been £11,000. Messrs. Crouch, Butler, and Savage were the architects.



WESLEYAN CHURCH AND SCHOOLS,
FOUR OAKS, BIRMINGHAM. CROUCH,
BUTLER, AND SAVAGE, ARCHITECTS.

SEVENTH MANCHESTER BUILDING
TRADES EXHIBITION.

At the Midland Hotel, Manchester, on February 15th, Mr. W. Cawood presided at a meeting of the exhibitors of the seventh Manchester Building Trades Exhibition, which will be held at the City Exhibition Hall, from March 5th to the 16th.

It was announced that Councillor S. W. Royse, J.P., Lord Mayor of Manchester had consented to open the exhibition at 12 noon on Tuesday, March 5th, and that Alderman J. R. Wilson, J.P., chairman of the Manchester Improvements Committee and Town Planning Committee, had consented to take the chair upon that occasion.

Resolutions dealing with the Reception Committee, and the names of gentlemen to propose and second various votes of thanks, were duly carried. It was announced that telephones at the special rate of £1 each could be affixed to the various stands, thus permitting the exhibitor to telephone from his own stand at the City Hall to his works. This charge is one-third of the charge usually made at exhibitions. Another interesting item was the printed list showing the special railway facilities from towns within the radius of 100 miles from Manchester to the exhibition.

A number of other resolutions were passed, and the chairman was specially thanked for the manner in which he had always given exhibitors the opportunity of taking part in the direction of exhibitions under his control.

The Chairman announced that more exhibitors had booked space this year than for any previous exhibition of this series, and that there was every prospect of the seventh Manchester Building Trades Exhibition being a record success. More than seventy firms are now included in the list of exhibitors.

Builders' Clerks' Benevolent Institution.

We understand that Mr. Dudley Bartlett, who is president this year of this Institution, is organising a theatrical performance in aid of the funds. This is to take place at the Royal Court Theatre, Sloane Square, on the evening of Saturday March 9th. The play to be presented is Bernard Shaw's "You Never Can Tell," and as it will be interpreted by that well-known dramatic society "The Strolling Players," a good entertainment is assured. Tickets, which range from 2s. to 10s., may be obtained on application to Mr. Dudley Bartlett at Tredegar Works, Bow.

Mr. E. S. Prior Elected Slade Professor at Cambridge.

Mr. Edward Schröder Prior, F.S.A., F.R.I.B.A., was on February 20th elected Slade Professor of Fine Art in succession to Dr. Waldstein, resigned. The new Professor was born in 1852, and was educated at Harrow and Caius. He was a pupil of Mr. Norman Shaw, R.A., and has been architect to Cambridge University, where he designed the building in which the present Medical School is housed, to Harrow School, and to Winchester College, and has built churches and houses in many parts of England. Mr. Prior was one of the founders of the Art-Workers' Guild, and has been secretary of the Arts and Crafts (London) Exhibition Society since 1902. His publications include "A History of Gothic Art in England" and book on the Cathedral-builders and the medieval figure-sculpture of England.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MARCH 6th, 1912.

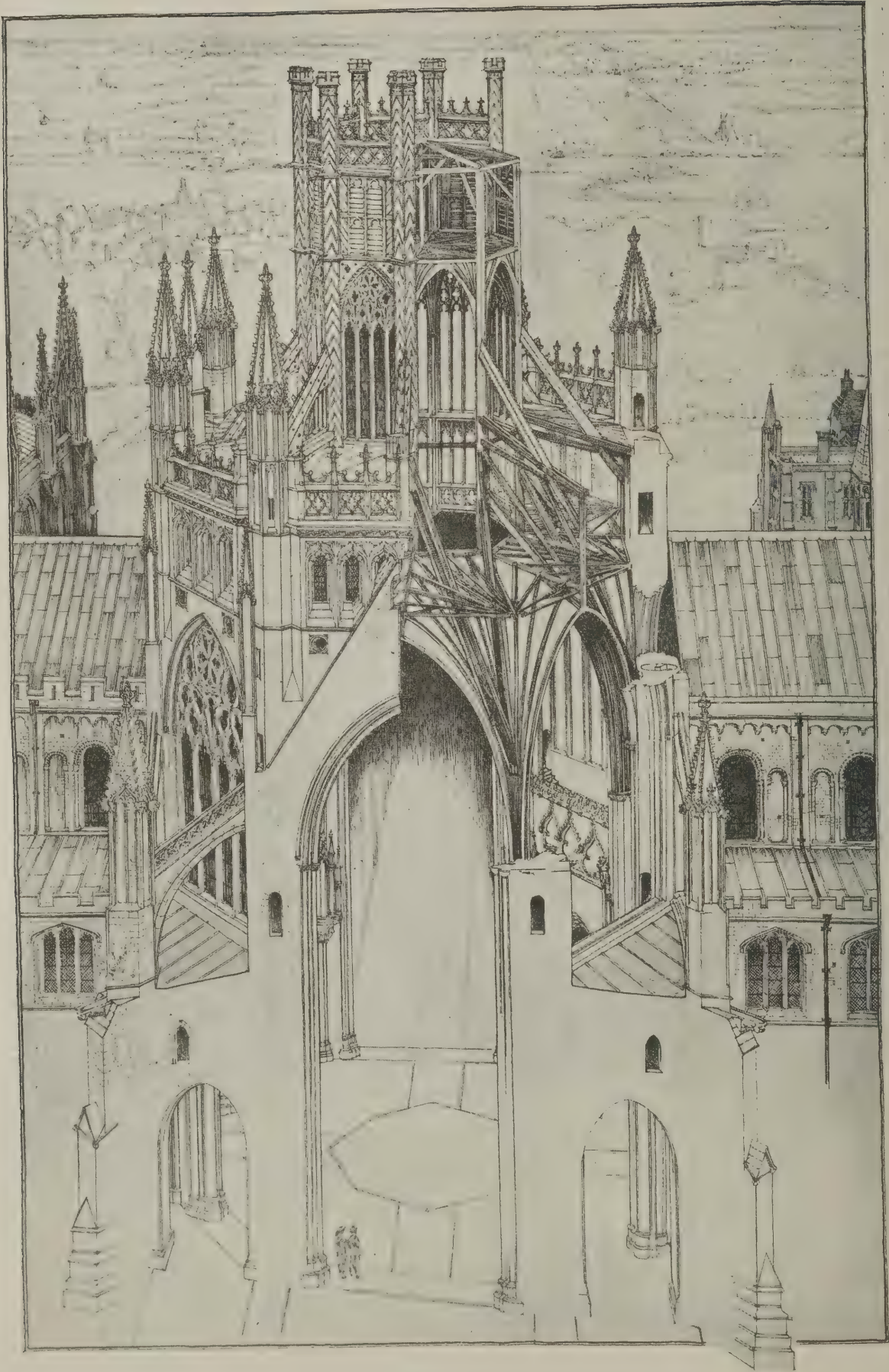
Volume XXXV,

No. 894.



DETAIL OF CHANCEL, HOLY TRINITY CHURCH, SLOANE SQUARE, LONDON, S.W.
J. D. SEDDING, ARCHITECT.

Holy Trinity Church embodies a great scheme (never carried to completion) in which the work of the craftsman is interwoven with the architect's conception. Mr. Henry Wilson executed the metalwork, of which a portion is here shown.



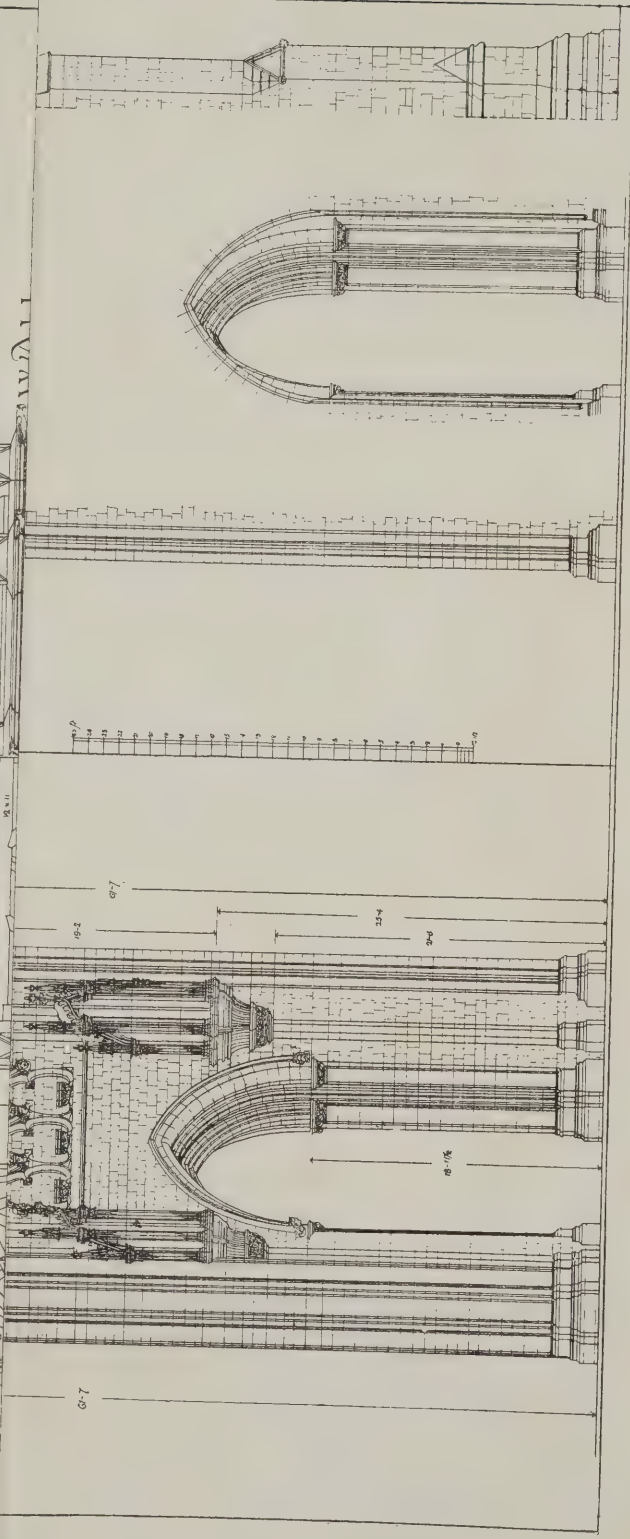
THE OCTAGON, ELY CATHEDRAL. DRAWN BY A. B. ALLEN.

(See page 254.)

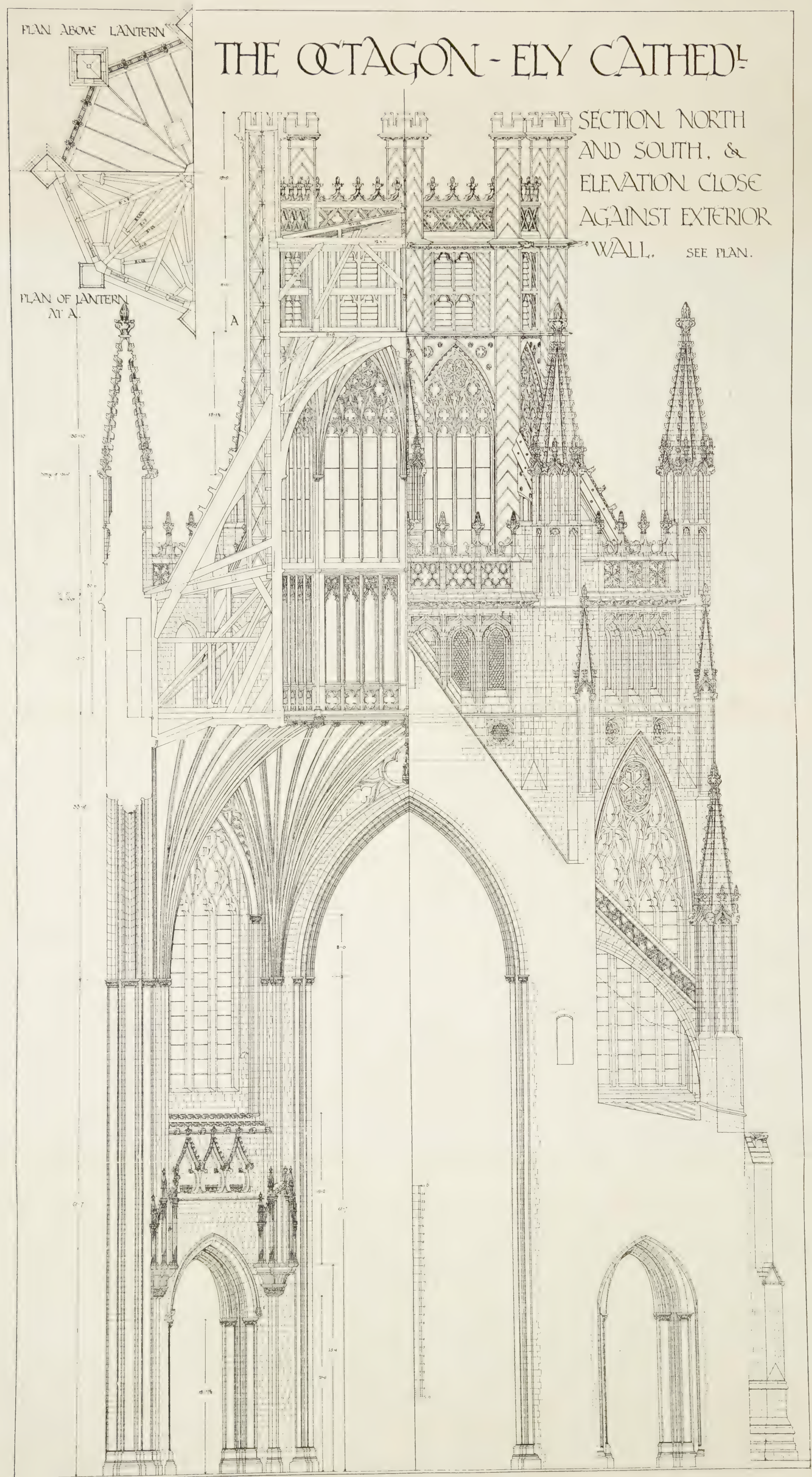
PLAN ABOVE LANTERN

THE OCTAGON-ELY CATHEDRAL

SECTION NORTH
AND SOUTH, &
ELEVATION CLOSE
AGAINST EXTERIOR



MEASURED AND DRAWN BY A. B. ALLEN.



THE ARCHITECTS' & BUILDERS' JOURNAL.

MARCH 6th 1912,

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 894.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The Institute and the Society of Architects.



THE meeting at the Institute rooms on January 8th to consider the proposed amalgamation of the Society of Architects with the Institute was, officially, a private one, and therefore we made no comment on it at the time except to record the result of the voting, and to congratulate Mr. Gibson on the speech which he made in bringing forward the proposals of the Council; one of the best speeches, certainly, that have ever been heard at an Institute meeting. That the rejection of the proposals (or, to speak more precisely, the amendment to refer them back to the Council for further consideration) should have been carried by a very large majority was not at all events due to any want of ability in the way in which they were brought forward. Since then it seems to have been judged right that the members at large should have the full report before them of what took place; this has now been published in the current issue of the Institute "Journal," and is therefore practically public property.

We fear the perusal of this report can leave no doubt that the Council made rather a serious mistake in the details at least of their policy, though, in the main, it was doubt intended for the best. Seeing that a majority of the profession were obviously in favour of a Registration Bill, it may have seemed, logically, best for the prospects of such a Bill that the two bodies should take united action. But the initial mistake was to formulate a draft Bill and make it an integral part of the proposal; to say to the Society of Architects—If you will put aside all opposition and join our ranks, we will engage to bring forward in Parliament a Bill as here set out. For some of the proposals in the Bill are such as Parliamentary assent would never be secured for. One is that every public body, committee, or trust "who shall hereafter erect or shall alter the exterior of any building facing any road or open space at a cost exceeding £1,000 out of funds supplied or provided by public grants, rates or other assessments, shall employ or appoint an architect as herein defined," &c. This, in fact, would be a Bill brought forward by the representative body of the profession to compel public bodies to employ one of their number. For architecture might be a very good thing that it should be so ordained, but it would arouse the opposition of every public body in the country, who would have far more power to make their influence felt in Parliament than any influence the representatives of the architects could bring in opposition to them. To legislate that no one should practise for hire or reward in designing a building unless he is an architect within the definition of this Act (Clause 4 of the draft Bill) is one thing; to attempt by law to dictate to all the public bodies in the country as to whom they should employ on their work is quite another thing. But what follows in the succeeding clause is still more impracticable: that in the case of bridges and similar structures primarily of an engineering character "they shall employ and appoint an architect to collaborate with the engineer in the design and supervision of the façade or exterior of the said buildings." Just imagine Parliament being asked to pass a law that effect! The idea is almost comical. It would be

a very good thing, no doubt, if this were done always; but it is a kind of improvement which can only be brought about by the influence of an educated public opinion, which has already had some little effect in that direction. But for the architects to come to the Government and say—Please pass a law that one of us shall always be employed to help an engineer in designing, would merely expose them to ridicule in the eyes of the legislature. Mr. Gibson said in his speech that the Institute did not want a nebulous shadowy measure which would govern nobody; they wanted to promote such a Bill as would practically enable them to control all the architects in the country. That is within their logical rights, but not a Bill to control all kinds of other corporate bodies outside the profession.

From the speeches made in opposition, it is obvious that the terms of amalgamation held out to the Society of Architects had caused serious dissatisfaction to many members of the Institute. One hundred members of the Society (not more than one hundred is the way it is put) were to become at once Fellows of the Institute on the mere recommendation of the expiring Council of their own body, without any other consideration. Considering that Fellows at present are either elected from the ranks of the Associates who have passed an examination, or are elected by the Council on account of their possessing eminent qualifications as architects, it is hardly to be expected that the present body of Fellows and Associates would regard such a sweeping proposal with approval. There are other points in the arrangement besides that, which we need not go into, but the collective effect of which certainly is that the terms of amalgamation are such as would be in every way to the advantage of the Society of Architects and by no means to the advantage of the Institute.

As Mr. Stanley Peach put it, in moving the amendment to the Council's proposals, why should the Institute go thus far out of its way to disarm the Society? The Institute is a powerful body possessing a Royal Charter, in a strong financial position, and with a very large membership. "What chance," said Mr. Peach, "would the Society of Architects have in opposing the Institute, or in proposing that they should be the Diploma Authority instead of this Institute? I do not believe that any Parliamentary Committee would consider that for a moment." And when we come to speak of the Charter, there is another serious question, which was raised by Mr. Sydney Perks, the seconder of the amendment. The Institute obtained a fresh Charter in 1887, for certain purposes, and another in 1909, and now it was proposed to ask for another in 1912. Mr. Perks quoted the opinion of one who, he said, was well able to advise on such a point; the opinion was that "the proposal to take in a Society of a certainly inferior position to your own would mean that you would be extending the privileges of the Royal Charter to a body without one, and that is a very serious thing for you to contemplate. It might lead to an enquiry, and it is not a good thing to have an enquiry about a Charter." Those are the words of common sense, and it is surprising that the point does not seem to have occurred to the Council of the Institute. It is certainly not to the advantage nor to the dignity of a body with a Royal Charter to be constantly asking for alterations and extensions to its terms.

One cannot, of course, be surprised that the Society of Architects, when invited to efface themselves as a separate

body, should have proposed the most advantageous terms they could for themselves; that is perfectly natural from their point of view, and they cannot be blamed for it. But the concessions made by the Institute were hardly in accordance with its own dignity or with full regard to the status of its own members, and one cannot feel any surprise at the opposition that has been aroused among its own ranks. The proposals have been referred back for further consideration; but our impression is that we shall not hear any more of the amalgamation scheme.

Some Points of Difference with Professor Lethaby.

A SMALL book on architecture by Professor Lethaby* raises some points of interest which we desire to take up with the distinguished author. First, let us say that Professor Lethaby was just the man to write such a book, as far as grasp of the subject is concerned, the extent and universality of his historical information being apparent on every page. Whether the result is very clear for the ordinary reader may be another question. The author is a little too much given to expressing himself in conundrums, so to speak, and he has ideas and opinions of his own in regard to architecture which, however interesting and suggestive in themselves (and they rarely fail to be so), would not in all cases be generally accepted as representing a normal view of the subject discussed. We can hardly agree, for instance, that the eastern form of the tall semi-ellipse in a dome or arch, "when we become accustomed to it, is seen to be the most beautiful form of arch, for it is the most perfect and scientific." Very few people will agree with that opinion, and it should hardly be stated as a normal conclusion in what is intended as a rudimentary book for giving a general idea of architecture to beginners in the subject. So far from its being the scientific form of arch, it arose from the naïve attempt of primitive builders to close over the walls in the only way in which they could manage it without centering built up from the floor—leaning them inwards as far as the adhesive quality of the bricks or mud (what engineers call their coefficient of friction) would allow with safety, and then closing in the top on a light centering; for centering there must have been for that part of it. That a dome of this shape, viewed from inside, would be seen to be the "most beautiful" by the majority of persons, and preferred to the grand sweep of a semicircular dome, is a mere paradox. The method by which arched vaults were built in Assyria without centering, by leaning each ring of the arch sloping backwards and making the voussoirs of the next ring adhere to it till the ring was completed, is referred to as if it were an ingenious method of arch construction whereas it is an exceedingly clumsy one, and cannot be carried out on a large scale; that is undoubtedly the reason why the Assyrian palaces are planned almost entirely in long narrow rooms. Then it is surely giving the amateur reader a very false impression of facts to say that every modern arch, so far as it is made homogeneous by cement, "is in a sense a bent beam—that is, the wedges do not act separately." That may be true "in a sense," but nevertheless the arch with wedge voussoirs would stand without any cement, granting that there was no movement or settling of the foundations; the cement is really only a safeguard against that.

In short, in all these passages about the arch the reader is rather encouraged to believe that unscientific expedients of primitive builders represent the normal and true method of arch-building; and what is at the bottom of this is evidently the author's predetermination to represent all architecture as merely the development of primitive building. It is impossible, he says, to differentiate architecture from building. It is extremely difficult, we grant, to frame a definition in words to express the difference, but it is one that we can all perceive in our minds, however difficult to express in words. To a certain extent this view of architecture is a wholesome one, and it brings forward the great interest which there is in all problems of building;

but it is going too far to deny to architecture the influence of intellectual choice. In his anxiety to do this, the author slightly speaks of the optical refinements, what we may call the concealed curvatures, in Greek buildings, saying that they are most natural and need no explanation; "curvature of lines furnishes an intermediate between the straight and the rounded." That does not apply to curvatures which were not meant to be seen, which were only made to prevent a false appearance of curvature. The idea was an outcome of the exceedingly refined perception of the Greeks of the great period, and by no means a "natural" idea, or why is it that we only find it with the Greeks? The Roman columns with their *visible* entasis are not a case in point at all. The assertion, referred to on page 64, that lines in the plan of some of the Egyptian temples are laid out in a just perceptible curve, has no certain foundation. Pennethorne asserted that he had found it in one temple; but as these "just perceptible" curves were not the same on both sides, and were discovered on the inside lines only of a quadrangle, the probability is that they were merely the result of a slight settlement. We quite agree, however, in the remarks on page 96 as to the wasted efforts of those who have attempted to deduce systems of proportion from the measurements of Greek temples. As the author says, the student is set on evolving some scheme of measures in the modulus of the diameter (of the column); "if it did not fit, he added on a foot or two, and said it must be so." It is perfectly true, and the same remark applies, even more strongly, to the efforts that have been made to prove the existence of a fixed modulus of proportions in Gothic buildings. They never will fit properly.

The nature of Gothic architecture is very graphically characterised as essentially "a problem in equilibrium." That is the great difference between Gothic and all other arched styles, except that we may perhaps call *St. Sophia* a problem in the equilibrium of domes. "The builders made an effort to do all that might be done in stone, and the possibilities of rearing stones one upon another were explored to the utmost." But, nevertheless, the reader ought not to be allowed to think that the problem of construction was everything. Imagine the most ingeniously balanced Gothic cathedral deprived of its mouldings and tracery and carving; would it then be the same great work of art? It may be added that in some of the French cathedrals the art of balancing thrusts was carried a great deal too far for the best architectural effect, making them look like pieces of stone scaffolding, externally.

We can hardly be surprised, of course, to find the author speaking rather contemptuously of the Renaissance period as the age of "architects' architecture"; it is to him "a style of boredom." We cannot find it so, nor is this, we believe, the general feeling now. But he admits that the Renaissance age had the great gift of the scientific spirit, and that we probably owe to it "larger ideas of civic order and hygiene"; which is something, at all events. And he admits (and we agree with him here) that while on the one hand the Renaissance was a rhetorical art, on the other hand "its artists to some degree considered first principles":—

"To go back to first principles in architecture is, we are often told, impossible. Doubtless it is to do so absolutely, but all schools of architecture have done it in some degree, and the Renaissance, in the thought of the greatest mind of its age, was to include an exhaustive exploration of the first principles of all arts. The history of art is full of instances of return to underlying principles."

With the concluding chapter, on "The Modern Position," we are more fully in agreement than with any other portion of the book. All modern buildings, says the author, "have too much that is merely capricious"; and if by modern buildings is meant those of the last decade or two, surely this is only too true. Architecture has become too largely a thing of quips and cranks, the interest of which will be gone in another generation. As Professor Lethaby says, an expressive form of art is only reached by building out in one direction for a long time; "no art that is only one man deep is worth much; it should be a thousand men deep." And he urges us to seek agreement on a scientific

* "Architecture: An Introduction to the History and Theory of the Art of Building." By W. R. Lethaby, London: Williams and Norgate, price 1s.

basis, on an endeavour after perfect structural efficiency, in the faith that, such agreement being reached, beauty will take care of itself. It will, provided there is a general, a public desire for it. That is what is really needed; a demand for great architecture. There is little enough of that at present. It is not genius, the author thinks, that is lacking. "An age that can produce Watts's 'Physical Energy,' Madox Brown's Manchester paintings, and the Forth Bridge, should be able to produce anything—anything, that is, except the Tower Bridge as well." We feel obliged to differ about the Manchester paintings, but otherwise the sentence is admirable, especially the satiric "except" at the close; and we recommend the whole of this concluding chapter to the attention of architects and general readers alike. The historical part of the book must be taken with much reservation, because it is permeated by the attempt to make history serve a special theory as to the non-intellectual origin of architecture, leading to such statements as that the dome of the Pantheon, with its central opening, "is the last word in the development from the primitive hut into which light entered by the same opening from which the smoke escaped." The dome of the Pantheon would have been built as it is if there had never been a primitive hut in the world.

The Royal Gold Medallist.

MR. BASIL CHAMPNEYS, who has been nominated for this year's Royal Gold Medal "for the promotion of Architecture," is chiefly known as the architect of several collegiate buildings at Oxford and Cambridge, and of the Rylands Library at Manchester. At Cambridge his work includes the Divinity and Literary Schools, Clough Hall, Newnham College, the Archæological Museum, and All Saints' Memorial, while at Oxford there are to his credit the Indian Institute, Mansfield College, and new buildings at Merton, New, Oriel, and Somerville. He also designed the Butler Museum at Harrow, the Quincentenary Buildings at Winchester College, the Grammar School at King's Lynn, and numerous churches, among the last named being St. Luke's, Kentish Town, and St. Mary Star of the Sea, Hastings. Mr. Champneys was born in 1842, and is therefore now 70 years of age. His father was Dean of Lichfield.



MR. BASIL CHAMPNEYS,
Who has been nominated for the Royal Gold Medal.

The True Hope for Architecture.

WHEN Mr. Eden read his exceedingly clever and amusing paper at the Architectural Association last week on "Hopes and Fears for Architecture," he was twitted by one of his audience afterwards with having brought before them far more "fears" than "hopes"; and there was some truth in this playful criticism. There are so many points in connection with architecture as practised at the present time which lend themselves to a satirical treatment on the part of an author with a capacity for putting things neatly. As Touchstone says in the play: "We that have good wits have much to answer for; we shall be flouting; we cannot hold." But flouting, however amusing for the moment (and it is something that a paper on architecture should be amusing; they are not always), does not carry one much further. We confess that in reading Mr. Eden's paper over again we have found it rather difficult to discover where his "hopes" are. The first glimmer of light we come to is the assertion that every passing phase (in the recent fashions of architecture) has left some good behind it. In the case of the Gothic Revival, this is certainly true of one of the benefits claimed for it; it left an example of enthusiasm, without which much cannot be accomplished. There was a real, a burning enthusiasm about the chief apostles of that revival; an enthusiasm which was communicative, and influenced most of those who were the younger generation at that time. There does not seem to be anything like such enthusiasm for architecture at present, and that is a serious want. Mr. Eden's other claim for the Revival, that it arrived at establishing definite principles, we fear will not hold water, because a good many of its principles are now perceived to have been false. The "Seven Lamps" retains its value only for its enthusiasm, not for its principles, unless it is claimed that it set a good example in endeavouring to formulate principles at all. But we do not know that much good has ever been done to architecture by discussing principles. It is rather chilly work.

The next "hope" that we can find is that the knowledge of architecture among educated people has made great strides during the last thirty years. It has improved somewhat, no doubt, but it has not got very far as yet; we certainly do not possess yet a public in this country who are earnestly desirous of having great architecture, and that is one of the greatest desiderata. As Lord Leighton said many years ago—"What the public want, that they will have." If the public earnestly desire great things in architecture, and think them worth paying for, such great things will be likely to be forthcoming. But there is little evidence of such a want at present.

The next "hope" that we can find is only quoted from another source, and there is nothing to show that the author of the paper believes in it. A lecturer had said that architecture must be living, must find its poetry in the life and its inspiration in the opportunities of the present; "are we not building every day," he said, "hotels, railway stations, asylums, baths and wash-houses, and abattoirs?" But we do not gather, from the spirit in which the reference was made, that the author of the paper found much comfort in these sources of inspiration.

The only other "hope" we can detect is that we have made some progress in one particular—namely, sympathetic and, as far as possible, traditional treatment of material, involving as it does both texture and colour. There has certainly been an improvement in that respect; we have developed an eye both for colour and texture, though we hardly think that this element of improvement goes as near to the root of good architecture as Mr. Eden seems to imply.

These are all the "hopes" we have been able to find after a careful reading of the paper; and for a paper which was long, though never dull, they do not seem very abundant. Let us try to be a little more optimistic.

There are two main influences which may aid in once more evolving great architecture among us. One, which we have already referred to, is enthusiasm, a real and keen interest in the subject, on the part both of the public and

the architects. The enthusiasm of the public has not as yet gone very far; in fact, there is as yet nothing to call forth enthusiasm; but there is a greater interest in the subject than there used to be; and we hope that interest, having begun to grow, may go on increasing. Without that the architect, however enthusiastic he may himself be, can hardly get his opportunity. The other hope for architecture, and one which concerns only the architect, would lie in nourishing the perception that architecture is not, as Mr. Eden put it (we can hardly think quite seriously), "only skin-deep"; that a true architectural treatment lies in the perception that a building is primarily an idea worked out in plan, in structure, and in mass, and not a mere matter of suitable, or sometimes unsuitable and capricious, surface detail. If an architect will only begin by thinking—How can this building best be disposed in plan to suit its practical purpose? next, How can it best be constructed and express its structure? and lastly, How can its general mass be most effectively disposed? he will have come near to producing a real and interesting piece of architecture, wholly apart from any question of detail. Detail is very important, no doubt; it is the quality which imparts refinement to a building; but it is not what makes architecture. It is the plan, and the disposition of the masses, that make the Houses of Parliament a great building; not the late Gothic detail, which is overdone and perhaps not quite so good as it might have been. The detail might all be altered, and it would still be a great building. Reynolds, in his Lectures on Art, drew particular attention to this quality in Vanbrugh, whose detail was certainly not very good; he always, said Reynolds, disposed his masses finely; a point that would naturally strike a painter. Now there are some lessons on this in American architecture. Referring to Mr. Eden's rather bantering reference to baths and wash-houses, and such buildings, as sources of inspiration, we find that some of the American architects do manage to make buildings of a merely utilitarian character architecturally interesting, merely by the disposal of mass in an effective manner. Or, to go to higher things, take a building which was referred to in the lecture under consideration,

the villa at Caprarola. The architect of that was one of the great authorities of his day on the Classic Orders, and issued elaborate publications on them, and he applied the Classic Order on the five faces of his famous villa. But it is not the treatment of the Orders that makes Vignola's Villa a celebrated building; you might find that as well done on fifty other Renaissance buildings. It is that the plan and conception of the building are strikingly effective and original; it represents a distinct *idea* in architecture. A true hope of architecture would lie in having more of that spirit in the treatment of buildings.

Another element that is very much needed is a larger and ampler treatment of modern architecture; everything is too small and timid with us in this country; but to have even the chance of that we must have a public ambition for great architecture. How came it that Poelaert was able to produce at Brussels a Law Courts building of such amplitude and dignity, far beyond what has been done in our much larger and richer capital? Because he worked for a Government that believed in great architecture, and thought it worth paying for. We cannot, unfortunately, command that from our own Government; the only hope is that there is some little progress in the last few years, in English public interest in architecture. Let us hope it may increase and do all we can to foster it.

The Old Town Hall, Manchester.

IN its old Town Hall in King Street, Manchester possesses a really fine piece of architecture, designed by Francis Goodwin, and dating from the first quarter of the nineteenth century. Well, therefore, is a public subscription being raised to save its noble façade; for the building, latterly used as the Reference Library, is to make way for a bank, the design of which, let us hope, will be worthy of the site. It appears that the cost of the building when opened in 1825 was £40,000, inclusive of site, whereas, when the arrangement for its sale was made nine years ago, Lloyd's Bank agreed to pay £161,750, which



THE OLD TOWN HALL, MANCHESTER (TILL LATELY THE REFERENCE LIBRARY), AS IT WAS IN 1866.



THE OLD TOWN HALL, MANCHESTER, AS AT PRESENT.

is one more example of how the value of property grows in the centre of a city.

As the time approached for the Bank to take over their purchase, it became evident that unless something was attempted for the preservation of the façade all visible record of Manchester's finest example of architectural design would be irrevocably lost. A proposal was therefore set on foot with the object of removing the façade to one of the parks of the city and there re-erecting it. To this proposal the Manchester Society of Architects gave its hearty support, the president, Mr. Edgar Wood, F.R.I.B.A., observing that "it would be for ever an interesting monument of the city history, showing a high standard of architecture attained at that time, of which any city might be justly proud. To the continuous stream of architectural students of the School of Architecture, which is a part of the Corporation scheme of education in conjunction with the University, this would have a real practical value for detail study and measurement. If the façade were re-erected with surroundings carefully selected combining foliage and water treatment, it would always be a source of educational value and æsthetic pleasure to the public, and would support the work and intention of the Art Gallery and the School of Art. We cannot urge too strongly that this is a rare example of the highest standard to which architecture has attained, and the Manchester Society welcomes the opportunity to offer such help for its partial retainment as lies in their power."

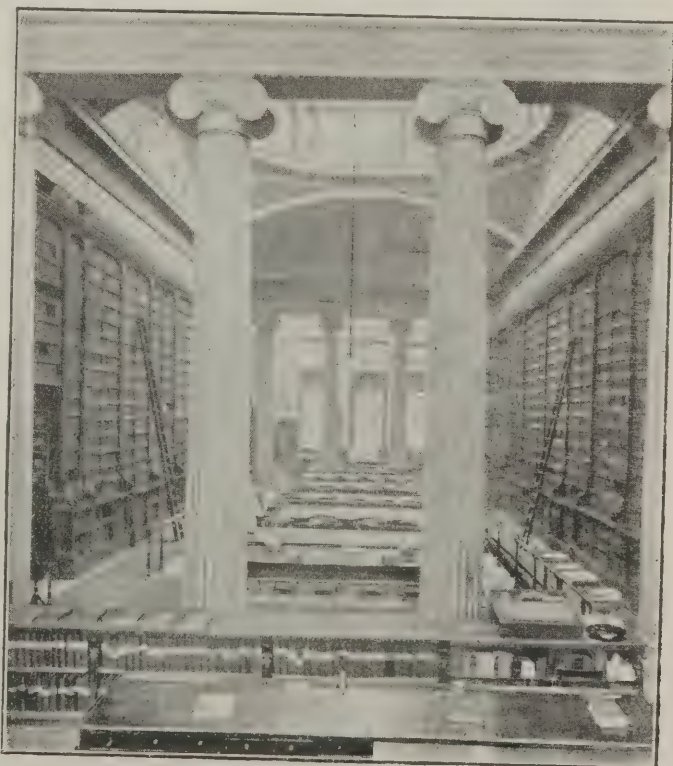
Two possible schemes have been suggested. The first is for the re-erection of the whole façade, including the covered loggia; this would cost about £2,300. The second is for the re-erection of the colonnade only, without backing; this would cost about £1,300. In either case the Parks Committee will only proceed with the scheme if half the amount required be raised by public subscription. It is to be hoped therefore that the efforts of the "Manchester Guardian" in attempting to raise the sum needed to preserve the work, either entire or in part, will meet with success.

We show here some photographs of the exterior as it was in 1866 and as it is to-day, from which it will be seen that the appearance of the building has suffered not only from the sooty atmosphere of Manchester, but also from some street-widening scheme of which we have no knowledge, but which has shorn the building of some of its steps, as well as the podium wall and its pedestals. For these exterior views and for the interior of the Reference Library we are indebted to the Chief Librarian; while Mr. John M. Macfarlane has kindly supplied us with a detail photograph of the colonnade. The building, of course, was never designed for use as a library, and the filling of its walls with bookshelves destroyed much of its architectural character, as became apparent when, a week or two ago, the library contents were removed to temporary premises in Piccadilly, and the empty rooms regained their original aspect. At the time of writing the housebreakers are

about to start the work of demolition, but there seems to be every hope that the scheme for the preservation of the façade will be successful.

A Fair Wages Clause.

A REVISED fair-wages clause for building contracts was the subject of a long and an animated debate at a recent meeting of Portsmouth Town Council. In most of its provisions the clause follows ordinary precedents, but the local master builders' associations opposed it on the ground that certain departures from the common form are obnoxious. It is provided that "proper books should be kept by contractors, giving hours and wages of employees, and be produced for inspection by any member of the Town Clerk's staff when required," and that "the contractor should give assurances that during the three months immediately preceding the date of his tender for the contract he had paid the recognised rate of wages and observed the conditions agreed to, or, in any trade where such rates did not exist, the contractor should, for the same period, have paid wages and observed conditions equal to those granted by the best employers in the same business in the district, or in any district, in which the workmen may be engaged." The Portsmouth master builders' associations doubtless referred to these points in the written protest in which they declared that the clause was "calculated to tamper with the freedom of their business," and that "the Council had no right to interfere with contracts other than public ones." They further objected that the penalties for breach—determination of the contract, or £500 as liquidated damages—were "most unjust to employers." Exception was taken by one of the speakers in the Town Council to the provision that the contractor must not "prohibit his workpeople from joining trade societies or continuing to be members of such societies." Ultimately the report was referred back, that "the clause might be amended so as to render it acceptable to both employer and employed." It will be a very cunningly devised clause that will produce that effect; but revision ought at least to get rid of the very objectionable demand for inspection of the contractor's books; and the money penalty for breach, if retained, should be either reduced to a reasonable sum or, preferably, left to be defined by an independent arbitrator. To allow a corporation power to decide what sum it will award itself by way of damages is not less ludicrous than unjust.



THE REFERENCE LIBRARY INTERIOR, 1878.

THE PROBLEM OF THE RESTORER.

At the third meeting of the session of the Edinburgh Architectural Association, Mr. William Davidson, vice-president, delivered a lecture on "The Restorer and his Attitude towards Old Work." The chair was occupied by Mr. J. B. Dunn, F.R.I.B.A., president.

Mr. Davidson, who dealt mainly with ecclesiastical restorations, opened his lecture by dividing restorers, generally, into four classes—viz., historical, antiquarian, æsthetic, and ritualistic. The attitude of each was described. The lecturer stated that for the ideal restoration all four stand-points must be considered; and while a profound reverence and veneration must be felt for all existing beautiful old work, it must be remembered that a church must be suitable for its purpose as a place of worship, and not considered merely as a sanctified museum; utility, comfort, and beautiful composition being absolutely imperative. The architect should not make the restoration an opportunity for the display and glorification of his own personality, at the expense of the history of building, but at the same time a sentimental zeal for the work of the dead should not prevent him from creating a beautiful and perfect unity where such was possible.

Mr. Davidson referred to some recent interventions of "antiquarian" and "protection societies," and maintained that the craze for preserving past history, if carried to its logical conclusion, would lead to a dead stop in the architectural history of old buildings which, if occupied for their original purpose, still had a living history.

He admitted, however, that unused ruins, such as Holyrood, Linlithgow, Melrose, Fountains, Kirkstall, etc., were, as a rule, best only carefully preserved and not restored. We also, he said, have a history to record which is, as a rule, more beautiful than much of the seventeenth, eighteenth, and nineteenth centuries' history.

Many views were shown of restorations by Sir Gilbert Scott, Bodley, Oldrid Scott, Temple Moore, Micklethwaite, Weir, Carøe, and others, which were analysed and criticised. These consisted mainly of abbeys and parish churches, and illustrated various methods of restoring stonework, woodwork, glass, etc. Additions to old buildings such as chapels, vestries, towers, and the introduction of organs and new furniture, were dealt with in detail, and the merits and faults of various systems discussed. The principles and practice of the Society for the Protection of Ancient Buildings were fully treated upon, and while the lecturer spoke in the highest terms of their work, which had saved to us many priceless gems of mediæval art, he considered that they too much ignored the æsthetic side of the question. Their "no-repeat-of-old-detail" policy had destroyed the scale, proportion, and beauty of many fine old churches.

The introduction of plain blocks instead of repeating old moulded work in wood and stone brought in a new scale which in many cases destroyed the unity.

Many examples of the work of the Protection Society's architect, Mr. William Weir, were shown, and Mr. Davidson spoke in the highest terms of much of Mr. Weir's work, which always showed a profound knowledge of the subject and reverence for the beauty of old work.

Mr. Davidson maintained that the work of the best craftsmen of to-day in stone, wood, plaster, glass, etc., quite equalled that of the fifteenth century, and he believed that with our present general tendency to return to first constructive principles, the day was rapidly dawning when, by the help of decorative and applied art, architecture would again become the glory and pride of our country, as it had been in mediæval times. In speaking of additions to old buildings, the lecturer agreed that they should not be merely copies of existing parts of the building. They should speak their history unmistakably, but the great feature to be noted was, that if the scale of the original work was good, it should be carried out in the new work. Examples

from the cathedrals of Florence and Chartres were shown to illustrate this point. The restoring of hammerbeam roofs and rood screens was shown by fine examples from Norfolk and Suffolk. In speaking of restoring glass, some excellent examples were shown from Chartres, Winchester, York, Norwich, etc. He agreed that no new glass should be introduced among old. Better a small pane of old kaleidoscopic fragments in the centre of plain old Dutch square or diamond panes, as was so beautifully done by Mr. King, of Norwich, under the supervision of Mr. Weir, at the east window of St. Peter's, Hungate, Norwich, than any more or less speculative attempt to complete the design.

In speaking of painting, Mr. Davidson observed that figure painting especially was such a personal work that any attempt to restore it rendered it absolutely valueless, even when done by the most sympathetic and able of artists. In purely geometric or floral work it might be done fairly successfully, as was seen at the chancel roof of Southwold, which, though repainted twice (he believed), still retained much of the mediæval feeling. Figure wall painting, as at South Burlingham, Potter Heigham, etc., and the work on the rood screens, should never on any account be touched up or restored, but should be carefully treated for preservation by an expert if they showed signs of decay.

The rebuilding of the Campanile at Venice was referred to as a piece of misplaced sentimentality.

In concluding his lecture, Mr. Davidson stated that no hard-and-fast rule could be drawn up for the guidance of the restorer, but he must possess a profound knowledge of old work, the uses of various types of plan, a thorough grasp of the evolution of design, a deep reverence for all beautiful old things, and be filled with unbounded enthusiasm for each work entrusted to his care—an enthusiasm which leads to a non-personal view of each individual problem—and who will be more jealous to preserve any real beauty of bygone years, than make its destruction an excuse for the display of his own personality and ability, but who will not at the same time sacrifice glorious opportunity for a mere sentimental zeal for the preservation of the work of the dead.

At the close of the lecture a keen discussion took place, in which Mr. John Watson, F.R.I.B.A., Mr. J. B. Dunn, F.R.I.B.A., Mr. James Gillespie, Mr. W. Stewart Morton, and others took part.

The lecture was illustrated by 10 lantern slides of English, French, and Italian cathedrals, and English abbey and parish churches.

Name and Address Required.

Will the correspondent who addresses us an enquiry from Leeds, signing himself "Brandon Grove," please forward his full name and address, without which we cannot undertake to answer his question?

A Costly City Hall.

One million seven hundred thousand pounds is to be the cost of the new City Hall and grounds in San Francisco. The building of this new hall, which will be of extraordinary magnificence, is to be begun at once upon the site of the old hall destroyed by the earthquake. The hall itself will cost £800,000, and another £900,000 is to be expended in the purchase of land in the neighbourhood.



DETAIL OF COLONNADE, OLD TOWN HALL, MANCHESTER.



THE LONDON OPERA HOUSE, KINGSWAY. BERTIE CREWE, ARCHITECT.

THE LONDON OPERA HOUSE.

Occupying one of the most prominent sites in London, the new Opera House in Kingsway has a main frontage of 265 ft., the Portugal Street side extending to 103 ft., while that in Sardinia Street is 108 ft.; the whole area covered being 4,500 ft. super. Portland stone on a granite base is employed for the main frontage, and is continued partly round each of the returns, which are finished in light red brick, with stone bands.

The entrance hall, which is approached by a broad flight of marble and mosaic steps, is embellished with columns and ainscot panelling, and has a coffered ceiling, executed in fibrous plaster; the ainscot being of mahogany. This hall opens on to the private-box foyer; twelve of the twenty-one boxes on this tier being provided with large ante-rooms. The stalls are reached by descending two marble staircases; and off the stalls there are sixteen more boxes.

Heavy girders carried on stanchions support the upper and lower tiers and the circle, and the box floor is suspended from the circle girder and from two wing girders carried from the circle girder into the stalls on each side of the auditorium; the view of the stage from all parts is unobstructed. The stalls and tiers accommodate more than 2,000 persons.

Details of the proscenium, etc., are as follows: Stage, 84 ft. wide, 64 ft. deep; proscenium opening, 45 ft. wide, 50 ft. high; top lights to stage, eight battens, containing 200 lights in each; side-lights, 75 at each side of the proscenium, with 12 hanging lengths of 24 lights each at sides of stage, all the lights being operated from one switchboard on the prompt side. A roof-garden is available for the use of the performers.

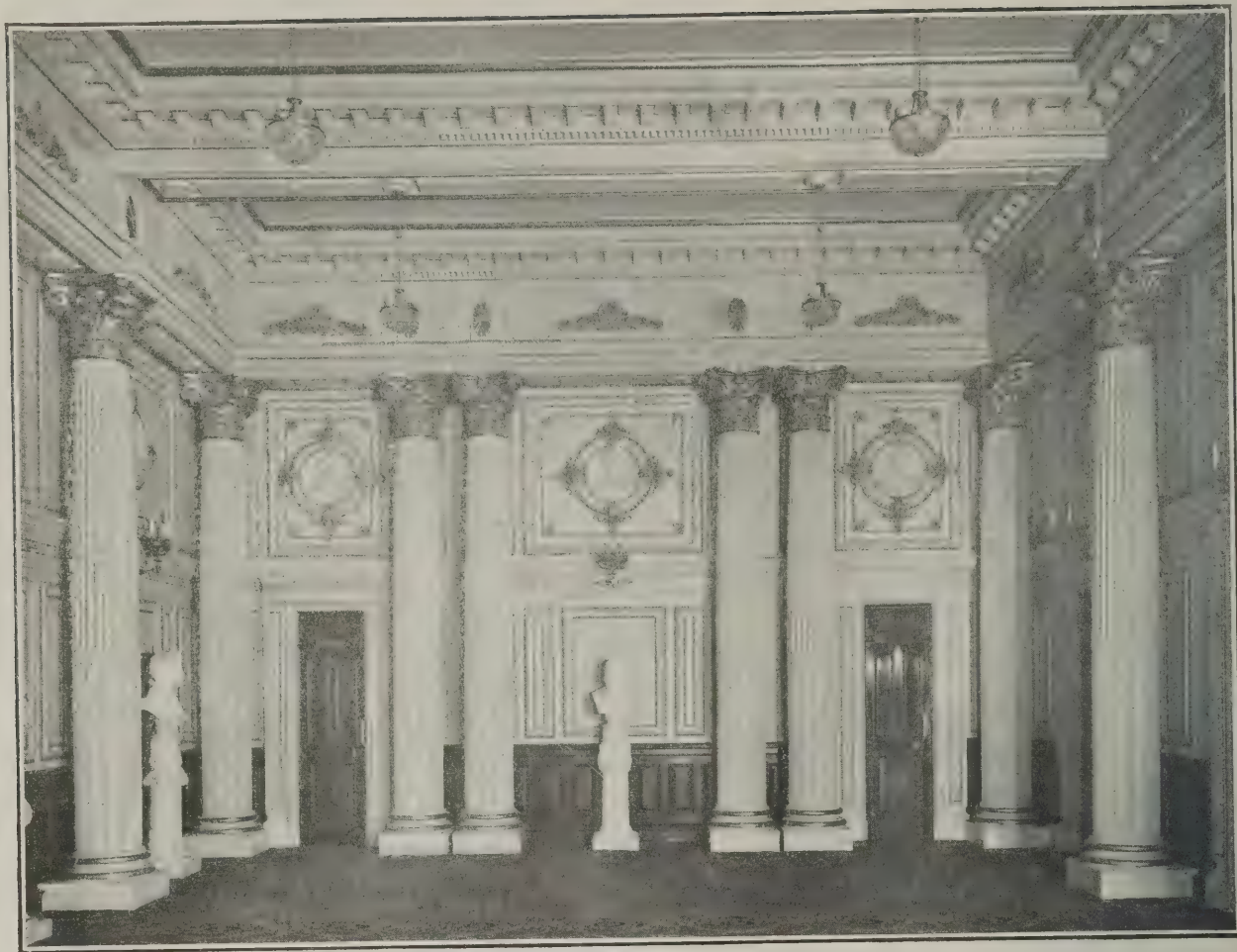
The statuary, by Mr. Thomas Rudge, comprises two chief groups, one at each end of the façade, representing respectively "Harmony" and "Melody," the central figure of each group being about 14 ft. high. The other figures symbolise Comedy, Tragedy, Song, and Dance, with two central figures (seated) of Inspiration and Composition.

Mr. Bertie Crewe was the architect, and the general contractors were Messrs. The Building Construction Company, Cockspur Street, S.W. The plasterwork shown by the accompanying illustrations was executed by Messrs. John Tanner and Son, of 6A, Grosvenor Road, S.W., and Liverpool. Other sub-contractors were the following:—Stonework, Messrs. The Bath Stone Firms, Ltd.; granite work Messrs. A. and F. Manuelle; marblework, Messrs. J. Whitehead and Sons, Ltd.; electric-light fittings, Messrs. Veritys, Ltd.; heating and ventilation, Messrs.

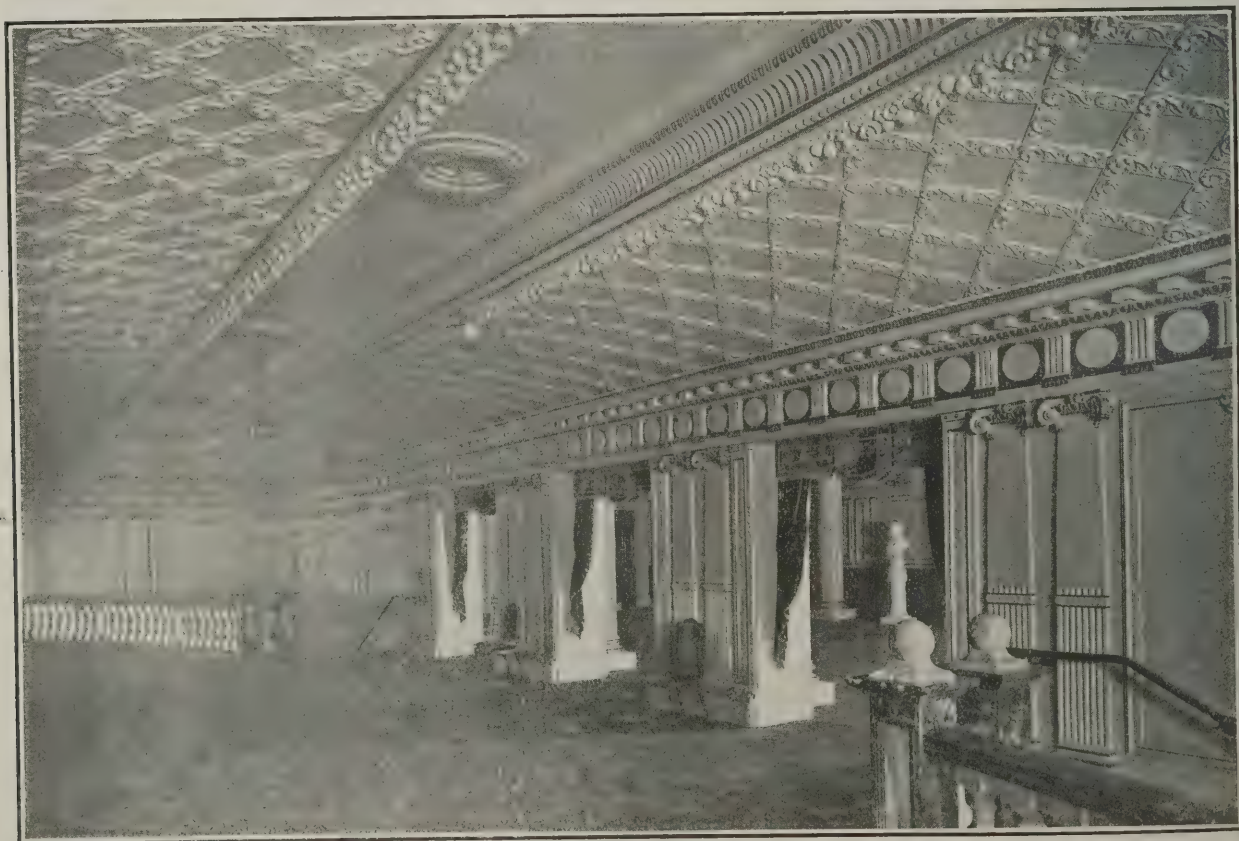
Strode and Co.; lifts, Messrs. Medway's Safety Lift Co. and Messrs. Hammond and Champness, Ltd.; rolling shutters, Messrs. Arthur L. Gibson and Co.; partitions, Messrs. A. and S. Wheeler; decorations, Messrs. A. R. Dean, Ltd.

THE NEW TUNNEL UNDER THE THAMES.

The new tunnel under the Thames, connecting North and South Woolwich, is now nearly completed, and will be ready for traffic during the summer. The cost was estimated at £78,860, and it is understood that that figure has not been materially exceeded. The L.C.C. has already carried out three tunnels of a similar character. They are:—Blackwall, £1,500,000; Greenwich, £180,000; Rotherhithe, £1,000,000. The tunnel extends from Nile Street, on the south side of the river, to Stanley Road, on the north side, and it has been constructed immediately near the spot where the ferry plies from bank to bank. It is 1,655 ft. in length, the inside diameter being 11 ft. 9 in., with a floor 8 ft. 9 in. wide. Entrance to the tunnel is afforded by means of vertical shafts, one at each end, built with the aid of compressed air



Entrance Hall.



Grand Foyer.

to a depth of 63 ft., on the north and 51 ft. on the south side of the river. Two spiral staircases, one for access and the other for egress, are erected in each shaft, and there is sufficient space for the provision of small lifts. The tunnel is level for 130 ft., with slight gradients on each side.

The work was designed by Mr. Maurice Fitzmaurice, the engineer-in-chief to the L.C.C.

COMPETITIONS.

North-Western Polytechnic.

In this competition, in which seven architects had been invited to submit designs, Mr. Arnold Mitchell, F.R.I.B.A. has received the award of the assessor (Mr. W. Flockhart, F.R.I.B.A.).

Spennymoor Public Hall.

The awards in this competition have been announced as follows: (1) Mr. G. T. Wellburn, Middlesbrough; (2) Messrs. Clark and Moscrop, Darlington; (3) Mr. A. Farndale, Brotton, Yorks.

Proposed New City Hall, Newcastle.

The committee authorised to report on the subject of the proposed city hall for Newcastle have recommended the site now occupied by the Northumberland Baths. They estimate the cost of building and equipment at about £100,000, and suggest that designs based on that sum shall be invited, and premiums of £500 (merging), £250, and £125 be offered.

Nurses' Home, Bolton.

In the competition for the new nurses' home which it is proposed to erect at the Bolton Infirmary as a memorial to King Edward VII., the assessor, Mr. J. B. Gass, F.R.I.B.A. has made the following awards: (1) Messrs. Henderson and Brown; (2) Messrs. Marshall, Robinson,

Son, and Wheeler; (3) Messrs. T. E. Smith and Son, all of Bolton. The Memorial Committee have decided to accept the design of Messrs. Henderson and Brown.

A Town Plan for Huddersfield.

Mr. W. P. Raynor, chairman of the Huddersfield Liberal Association, has written a letter to Mr. Alderman C. Smith, chairman of the Housing and Town-planning Committee of the Corporation, in which he says that on behalf of himself and a few friends he is enabled to forward £100 with the view of providing

premiums for the best scheme or plan of town planning and housing applicable to the needs of Huddersfield.

SOCIETIES AND INSTITUTIONS.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

A general meeting of this society was held on February 22nd, the president, Mr. Sydney D. Kitson, in the chair, when the feature of the evening was an exhibition of drawings from the Liverpool School of Architecture, Professor C. H. Reilly, M.A., A.R.I.B.A., giving an informal lecture on the methods of the school.

The large number of students and members present indicated the considerable interest taken in their work, and the debate which followed the lecture concluded a very interesting and successful meeting.

LONDON ASSOCIATION OF MASTER DECORATORS.

A meeting of the General Committee of the Association was held at 92, Queen Victoria Street, on February 12th, Mr. C. E. Wilkinson in the chair.

The Committee proceeded to the consideration of the publication of the revised report of the Education Committee, in conjunction with letters from the L.C.C. appointing a date for receiving a deputation.

The Chairman suggested that the whole of the Education Committee should form a deputation, with certain other members who had taken an interest in the subject, and this was agreed to.

It was agreed to make the Insurance Act a special item on the agenda in order to elicit the feeling of members at the next general meeting.

The Committee then proceeded to consider the desirability of urging local bodies as a means of relieving distress and meeting trade conditions to arrange their painting and decorating contracts at



THE LONDON OPERA HOUSE: STALLS FOYER.



THE LONDON OPERA HOUSE: DETAIL OF PLASTERWORK AROUND DOORWAY.

times when business was slack and in consequence much unemployment existed. After prolonged discussion it was agreed that the members of the Association and the trade should be invited to offer general suggestions on the subject.

The Committee next considered the subject of adopting a discharge certificate in connection with the trade. The idea was a certificate which the workman could carry containing particulars of his various employments, the length of time such employment was held, etc.

The Chairman said he would make a note to obtain samples and estimates of the proposed books in accordance with the suggestions that had been offered, and submit them to the next committee.

It was agreed that the general meeting should be held on March 25th, and that the following items should appear on the agenda: (1) action to be taken with reference to the Insurance Act; (2) report of the educational committee and the deputation to the L.C.C.; (3) to discuss the issue of certificates of employment and discharge.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.

At a meeting of this society on February 23rd, Mr. James S. Boyd presiding, Mr. James Muir lectured on "The Management of Building Contracts." The lecturer urged that a business and an architectural training was absolutely necessary to the contractor who was entrusted with difficult and costly work. Thus he would be enabled to give satisfaction to his clients and earn profit for himself. The lecturer also dealt with the terms laid down in schedules, the pricing of quantities, adjustment of claims for extras, etc., and insisted that no contract of any kind gave satisfaction unless the utmost harmony was maintained between the contractors and those who superintend the works.—T. DAVIS, joint secretary.

JUNIOR INSTITUTION OF ENGINEERS.

The annual dinner of the above Institution was held at the Hotel Cecil on February 17th. The president of the Institution, Commendatore P. Marconi, D.Sc., LL.D., was in the chair, and amongst the other guests were Vice-Admiral Sir H. B. Jackson (commanding the Royal Naval War College), Engineer Vice-Admiral Sir Henry J. Oram, Sir George Greenhill, Mr. G. C. Horsley (president of the Architectural Association), Professor John Perry, Count Albiz (managing director of the Spanish Marconi Company), Mr. G. C. Isaacs (managing director of Marconi's Wireless Telegraph Co., Ltd.), Major H. B. Strange, Professor H. J. Spooner, Mr. W. B. Bryan (engineer to the Metropolitan Water Board), and Mr. T. E. Gatehouse.

The toast of the evening was "Electrical Intercommunication," submitted by Professor John Perry, who, in the course of his remarks, said that in a very short time, he was told, they would be able to telephone from New York to San Francisco, and from London to any part of the British Isles. It is interesting to note that in the United States there were 6,000,000 telephones in use.

The President, in responding to the toast, spoke of the past, present, and future of wireless telegraphy.

An interesting feature of the evening was the presentation to Mr. Walter T. Dunn of an illuminated address, and a

cheque, in recognition of his services as secretary for twenty-seven years.

The other toasts were "The Junior Institution of Engineers," proposed by Mr. Gerald C. Horsley, Mr. Dunn responding; and "The President," proposed by Mr. S. Bylander.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

The annual general meeting of the above institution took place at the offices, Koh-i-Noor House, Kingsway, W.C., on February 27th, Mr. Howard W. Trollope in the chair, when the report and balance sheet for the past year were submitted. The latter showed that the income from subscriptions, donations, dividends, etc., was about £780, and of this amount the sum of £758 was paid in annual pensions, and also £5 granted as temporary relief.

The late Mr. John Howard Colls left to the Institution £270, which was allocated to the purchase of a presentation to the Orphanage Working School.

Mr. Howard Trollope was heartily thanked for his excellent services during the past year, and Mr. Dudley Bartlett, whom he inducted to the chair as successor, was enthusiastically welcomed.

The committee hopes to gain sufficient support to make the receipts cover the expenditure, and Mr. Dudley Bartlett is already working hard to achieve this.—JOHN AUSTIN, secretary, 39, Lordship Lane, Wood Green, N.

LONDON'S GUILDHALL BUILDINGS.

The City Lands Committee of the City of London have been authorised to print details of the scheme which for some time they have had under consideration for making extensive alterations in the Guildhall buildings. The proposal is to reconstruct the Art Gallery and the whole of the eastern wing, starting from where the Library premises end, and including the site of the present Irish Chamber on the opposite side of Guildhall Buildings. According to the plans which have been prepared by the

City officials, a bridge will be thrown across the street known as Guildhall Buildings. There is also a proposal, to which, however, effect would be given at a later date, to rebuild the west side, the part that is at present occupied by the Guildhall Justice Room. While no official statement is at present available, the main objects for the change are the provision of better accommodation for the Courts, and additional space for the Art Gallery. The plans which have been prepared show that there will be available for the Art Gallery three rooms 70 ft long, and several smaller rooms for cabinet pictures.

The proposal is as yet only in the initial stages, though a model has been prepared to show clearly what would be its extent. It has been approved by several committees that have considered it, and from the fact that leave has been granted to have the details printed it may be assumed that it has also been passed by the City Lands Committee. In order, however, that effect should be given to it, it will have to be brought before the Court of Common Council, who alone have power to authorise it and to provide the necessary funds—about £60,000.

COMMITTEE OF INQUIRY AS TO BUILDINGS ON SMALL HOLDINGS.

The President of the Board of Agriculture and Fisheries has appointed a Departmental Committee: (1) to inquire and report as to the nature and character of the buildings which should be provided for use in connection with small agricultural holdings in England and Wales, regard being had: (a) to the convenience and requirements of the occupiers; (b) to considerations of economy, and also the possibility of the reduction of cost by the use of materials and methods of construction different from those ordinarily employed at present; (c) to the special agricultural and building conditions of the different parts of the country; and (d) to the various requirements of the Public Health Acts and any Orders or Regulations made thereunder. (2) To submit a series of plans and specifications likely to be of assistance to local authorities and landowners for the purpose. The committee is constituted as follows: Mr. Christopher Turnor (chairman); Mr. Colin Campbell; Mr. E. J. Cheney, an assistant secretary to the Board of Agriculture and Fisheries; Mr. F. R. Harding-Newman; Mr. Cecil Harmsworth, M.P.; Mr. A. Ainsworth Hunt, M.S.A.; Mr. H. H. Law, M.Inst.C.E., Deputy Chief Engineering Inspector of the Local Government Board; Mr. Henry T. Tate; Mr. Raymond Unwin. Mr. C. W. Sabin, of the Board of Agriculture and Fisheries, will act as Secretary.

THE NEW A.A. SECRETARY.

At the last meeting of the Architectural Association the appointment was announced of Mr. F. R. Yerbury to the secretaryship rendered vacant by the death of Mr. D. G. Driver. Mr. Yerbury has been connected with the Association for the past eleven years, during which time he very ably discharged the duties of assistant to the late Mr. Driver. It is obvious, therefore, that no one with a more intimate knowledge of the Association and its work could have been chosen for the post; and the appointment is one upon which both Mr. Yerbury and the Association may be heartily congratulated.



MR. F. R. YERBURY
(Secretary of the Architectural Association).

HOPES AND FEARS FOR ARCHITECTURE.*

BY F. C. EDEN.

If, in Mr. Eden's paper, it is perhaps observable that the fears are more insistent than the hopes, it may be consoling to remember that the same criticism could be as justly applied to William Morris's "Hopes and Fears for Art," and that, indeed, this tendency is a common note of the critical temperament. The author's main contention seems to be that while fashions and fads may incessantly come and go, what is truly abiding is based on knowledge of the past.

EARLY in the century the Greek revival which had been suggested by Stuart and Revett's great work, and vivified by the importation of the Elgin marbles, attracted, to its rather dreary refinements such men as Inwood, Smirke, Elmes, and Lockerell, to be presently thrust aside by the careful, if uninspired, Italian manner which we associate with the name of Barry. Meanwhile, a more remarkable movement was gaining strength—namely, the Gothic revival, with Pugin for hierophant and Ruskin for its prophet. Though these enthusiasts deemed its foundations to be upon the holy hills of truth, eternal and immutable, the Gothic phase proved to be as temporary as any edifice raised with hands. Weakened by the strain put upon it by such essays in the ungainly S. Eaton Hall and Keble College, the rushing weight of Street's Law Courts brought about the slow collapse of the movement, and Bodley was truly the last, as well as the most cultured, of the Gothos.

Workman becomes Craftsman.

The reaction against mediæval copyism, which was intended for such, set in with some violence; fretful versions of "Queen Anne," free (and easy) or ungrammatical classic; Dutch and Flemish motives all ad their little day. Soon we began to hear the workman whispered of as a craftsman. The professional architect became the bugbear of some. The craftsman then it was who was to redeem the arts; though how he was to do so without his ancient backing of tradition and hereditary skill is not even yet apparent. A small vogue, hardly to be called a fashion, was once started in favour of the Byzantine manner by a building not far from here, but I do not fancy it ever came to much.

Picturesqueness and a Classic Impulse

All this time the grand manner of domestic building had been forgotten; picturesqueness was everywhere attempted, and misunderstood to consist of jagged skylines and jumbled incompatibles. In the next stage the hidden stirring of some Classic impulse moved the professors of this nook-and-corner style to prune, chasten, and square up their designs. Sobriety began to rule.

We are not altogether surprised to notice how large a proportion of the designs submitted in recent competitions are rather bleak and toneless efforts in the sort of Greek that is learnt by looking over a Frenchman's shoulder. Whatever excellences they may possess in planning and so forth, it must be admitted that they leave us cold. But of all fashions in art, Paris fashions are now for us the most pernicious. Just as in literature each language has its individual genius and rhythm, so in art. Gallic idioms are of ours, Gallic graces quite other. Consider the influence of French ideas upon the current manner of design as displayed in recent buildings and competitions. I do not know how to describe it except as a kind of architectural cubism. The dominant motif is the block. We watch

it standing uneasily on cornices, hanging from sills, stepped, imposed, superimposed *appliqué* to the wall face; tight wreaths of laurel and myrtle clasp and interpenetrate it; guttae weep from it—there is no designing without tears now for the young architect—while scraps of columns, mouldings, or carving emerge with Rodin-esque inconsequence from ponderous chunks of masoned stone.

Fashions and Art.

Are we to account for the incessant change which the last hundred years have witnessed as a stirring of vigorous life or as a restless craving for some new thing? Seeing that all great accomplishment in the past has come from working steadily along a simple line of age-long tradition, it cannot be seriously maintained that such rapidly changing fashions are beneficial to art. Nevertheless, almost every passing phase has left some good behind it.

The Gist of the Gothic Revival.

For example, there is still something to be learnt from the Gothic revival. The lesson is, I think, twofold. First, enthusiasm. The writings of Pugin, Street, and others brim over with it. Such books as "Brick and Marble in Italy," or Webb's "Continental Ecclesiology," are most refreshing reading for this very reason. However much we may smile at some of its manifestations of zeal, we may well sigh for a share of that contagious spirit. And, secondly, definite principles, without which enthusiasm runs to seed. The chief apostles of the movement—Pugin, Morris, and pre-eminently Ruskin—made an earnest attempt to decipher and codify the laws of artistic conduct. If the principles enunciated by these "intolerant amateurs" were universal and sound, I am not concerned to deny that a certain falseness and partiality in their application has run back like a taint and corrupted the source; with the result that now there is little recognition of any fixed laws or æsthetic standard. The followers of art have become an undisciplined mob with a mob's capricious temper, and the practice of art has become a riot of eclecticism and experiment.

Again, it was the arts and crafts movement which emphasised the importance of a more intimate relationship between material, workmanship, and design; and though the doctrine is sometimes pushed to the point of absurdity, its influence has already been considerable and in the main wholesome.

The Craze for Antiquity.

The present is an age of connoisseurship. Old panelling, chimneypieces, and other fixtures are fitted up in new homes. Dilapidated vases, figures, sundials, and worn-out paving-stones grace freshly laid-out gardens and terraces. Pavements are laid and walls built to give hold to vegetable growths, and sprayed to encourage lichen and mosses symptomatic of hoary antiquity. Oak is greyed with lime and sandblasted to give it texture, marble is stained, gilding and paint are toned and glazed to obtain the effect of age. The same effect is sought by

reversion to materials and methods that were used of old time. The materials selected are such as weather well and soon lose their rawness and novelty. Bricks are rough and small, joints are wide and white, and pointing is eschewed; timber is wrought with the adze and peppered with protruding pins; stone is roughly tooled and so left; wall-plastering is finished with an undulating surface; roofs are laid in gently sweeping curves and of second-hand tiles, if such are to be got.

Some may be inclined to divide these methods of treatment into legitimate and otherwise. The use of the adze, for example, though somewhat of an affected archaism, may be tolerated; while the sandblast is a fraud and a fake. The whole tendency will be condemned by others as unwholesome, decadent, and dilettante. But if the surface produced upon timber by the sandblast be artificial, is it one whit more so than that produced by the circular saw or the planing machine? And if greying with lime be illegitimate, what about yellowing with boiled oil? And, finally, if it be a fraud to make new buildings look old, how shall we characterise the really successful attempts of many architects to make old buildings look new?

Advancement of Taste.

The question of the education of the architect is ever with us, but what is really pressing is the education of the general public. However scholarly and efficient as a body architects may be, they are powerless until the outside world becomes interested and appreciative. However, there is little doubt that among educated people the knowledge of architecture has made enormous strides during the past thirty years, and I think that for this advance connoisseurship or the collecting mania is largely responsible. It does breed in its victims a feeling for form, an appreciation of good workmanship, and it creates a standard. In other words, it educates popular taste. It would seem to be partly the cause and partly the effect of the present popularity of eighteenth-century art, which is, at first sight, so strange and unaccountable.

Art and Contemporary Life.

What is there in its refinement, repose, and freedom from advertisement, its coldness and aloofness and well-bred restraint to appeal to a bustling and commercial age? For art does not go by contraries. It is an expression of contemporary life. The haphazard, unrelated, and individualistic dwellings of the Victorian era, for example, reflect clearly enough the industrial expansion of the time and consequent emergence of the middle classes. They are eloquent of newly fledged and inarticulate ambitions, of that self-assertiveness and carelessness of treading on another's toes so characteristic of the race of men who have started in life with the proverbial shilling.

The author of a recent article on "The Aristocratic Influence in Art" notes with surprise that this cult of Georgian art is "accompanied by no sign of interest in the human significance of the style. It never seems to be imagined by its votaries that eighteenth-century art, coherent and consistent as it is in all its details, stands for a certain definite philosophy of life. Not a trace does it exhibit of the superabundant vitality and warmth of popular art, but rather inclines to a certain coldness and arrogance of expression, its very perfection of taste lending it an air

of exclusiveness, as a thing aloof from common appreciation. It is its aristocratic purpose or tendency which constitutes its note as a style, and is an accurate reflection of the aristocratic ascendancy which began with the overthrow of the autocracy of the Monarch in 1688, and lasted until the Reform Bill. The author goes on to suggest that the coming democratic ascendancy will be registered in art in the same way, and concludes that "the air is full of promise. Beneath modern connoisseurship, itself the inevitable legacy of the aristocratic epoch, a healthier and stronger movement is fermenting. It is from the workshops of England that the rescuers of our art are coming. In the modern democratic advance lies the best hope for art." This reads like an echo of the old arts and crafts war-cry, but there is room for serious doubt whether great art can be born or thrive under a democracy. Athens was to all intents and purposes an oligarchy, so was Venice. What has Switzerland done for art? And she alone among democratic States has had time to show her capabilities. Still, if there be ground for this hope, if the democratic advance be reddening the horizon, surely our public architecture should catch some reflection of the coming dawn.

Vernacular Architecture.

But of this I am convinced, that we have a form of architecture which is pure vernacular, racy of the soil, straight from the "great heart of the people." It is built with entire and obvious singleness of aim, without affectation or conscious striving after beauty, and of the materials that are easiest to be got. The professional architect, that boggy of a certain school of critics, has no part nor lot in it. It comes as direct from the workshop as anything possibly could do. I allude to the architecture of the typical suburb, of the artizans' quarter, of the speculator. Perhaps this is where the true hope for architecture lies. Who can tell?

Reinforced Concrete.

The main purpose of all mechanical inventions, from the printing press onwards, has been not that things may be better done, but that they may be more quickly done. This, I suppose, is the chief recommendation of reinforced concrete as a building material.

Attempts have been made abroad if not at home to originate a style peculiar to a new and untried material. We are to use it in the most direct way possible, with entire truth to its qualities of thinness, toughness, and so forth. A monolithic building should achieve such expression as it is capable of without imitation of other materials or reminiscence of other methods of construction. Let it confess itself for what it is without concealment and without shame. This is the way, we are told, to achieve character; beauty may come later—out of the strong will come forth sweetness. But whatever the material we are using the natural conditions of gravity, weather, and light remain unchanged; and our endeavours to meet these conditions cannot be expressed in ways wholly different from those of the past.

Treatment of Wall-face.

Some, again, are sorely puzzled over the proper treatment of the wall-face. One will employ acid to dissolve the matrix and expose the aggregate, another will tap the surface to remove the aggregate and emphasise the matrix. A third, following a counsel of despair, cloaks his

skeleton with stone, brick, or faience, which does not seem a great advance upon the Tower Bridge type.

To the man whose tastes are calculating and scientific reinforced concrete makes an irresistible appeal; whereas, in the view of the *laudator temporis acti*, an ounce of tradition, that is to say, experience methodised by the knowledge that comes with centuries of practice, will always outweigh a ton of professional theorising. Though, I dare say, he will be glad enough to use it on occasion, however shamefacedly, to help a lame dog over a stile or cut some Gordian knot of construction.

The Shop Front.

Just as the church and the castle may be taken as typical mediæval aspirations, so we may safely select as the building most representative of the spirit of this industrial age the shop-front. It has been dinned into us from our architectural cradles as a prime axiom of criticism that every edifice must be expressive of its purpose and use. What the requirements of an up-to-date shop may be an up-to-date shopkeeper may be trusted to know. In the din and rattle of commercial activity it is doubtless necessary to yell like a virago on a doorstep in order to be heard; and so the shopman declares for the largest possible area of glass for the advertisement of his wares; and threatens the building owner with an appreciably lowered rental for every post and pier beyond the engineer's minimum.

What, then, is to happen when the conditions imposed are vulgar, sordid, or unworthy? Simply this: if the axiom above stated is to hold good, the architecture will have to follow suit; and then the strangest result ensues. To save his art from shipwreck the skilled architect throws overboard its first principles, and his design becomes an inexpressive or lying mask. But such conditions do not hamper the careless practitioner. He complies with them willingly enough, and so his work is actually more characteristic and expressive than that of his conscientious brother.

The Block of Flats.

Or we may consider another class of building common enough in large towns—the block of flats, or the oddly named "model dwellings." Here conditions which imply several storeys of approximately equal height, subdivided into suites of small rooms, produce of necessity frontages in which the proportion of solids to voids is much the same as in a sieve. Add to this the necessity of building cheaply enough to show a fair percentage upon capital invested, and I ask you whether architecture so conditioned can be monumental.

A Rosier View.

But it is possible to take a rosier view. "The true artist," it is said, "unhesitatingly accepts the conditions imposed upon him, whatever they may be, and is often able to turn the stumbling-block in his path into a stepping-stone to higher things." It was in this spirit that a lecturer not long since twitted architects with overmuch clinging to the past. He maintained with spirit that architecture must be living, and in order to live must find its poetry in the life and its inspiration in the opportunities of the present; and surely never were opportunities so many, so splendid, or so various as now. To make his meaning clear he was obliging enough to enumerate some of the occasions upon which the divine *afflatus* may be trusted to inspire the erection of poems in (I suppose) reinforced concrete.

Are we not building every day, he cried, hotels, railway-stations, asylums, baths and washhouses, and abattoirs?

What of Town Planning?

And now what of town planning? Is the movement which has by this time gained considerable momentum likely to communicate any forward impetus to your art? The cottage heresy is indicative of a sickness which has long afflicted British architecture, and that is pettiness. By this I mean not only the material malady, timidity of scale—so noticeable in our larger buildings—but the more serious spiritual disorder, smallness of idea. Have we any ground for hope, based on the experiments at Port Sunlight, Letchworth, Golder's Green, and Gidea Park, that when the designer has to think in acres instead of poles and in streets and squares instead of single houses, his ideas will be braced to a large scope, or will they peter out in a mere multiplication of diminutive and unrelated units?

Modern notions of hygiene and traffic facilities incline to the spacious boulevard—icy and wind-swept in winter, dusty and scorching in summer, and wide enough to enable the greatest possible number of steam-lorries to rattle your windows and jar your nerves in the shortest possible time. But where, I ask, is the lover of good things wont to linger in his search for beauty and historic interest? Among the straight, unhaunted streets of Mannheim, Karlsruhe, and Turin, or among the memories and surprises of Toledo, Siena, and Bruges? And as to what constitutes the ideal town, some of us may be inclined to think that the opinions of the painter and the poet are at least as valuable as those of the inspector of nuisances and the sewage farmer.

Knowledge of the Past.

When all deductions have been made for the evils to which architecture has to submit in allowing the dictates of fashion or in compliance with requirements of ever-increasing complexity and uselessness, we may, I think, claim to have made real progress in one, and that a most important, particular, since it covers nearly the whole ground—namely, sympathetic and, as far as possible, traditional treatment of material, involving as it does both texture and colour. We have realised that architectural, like other beauty, is only skin-deep.

Improvements in taste and feeling have been brought to pass not by the invention of new materials and methods, but by increased knowledge of the past. The further we are enabled to enter into that rich heritage, the clearer will it become to us that "in its contact with the ages the wisdom of the ancients has come down to us absolutely unimpaired."

DISCUSSION.

Mr. Edward Warren, proposing a vote of thanks, said that Mr. Eden had been most entertaining and suggestive, but destructive rather than constructive. His fears had predominated over his hopes. The dismal failure of the early nineteenth-century Greek phase, he continued, had been prepared for by the thin refinements of the late eighteenth-century and the emasculated Adam manner. There had lately been a recrudescence of Greek ideals; but he trusted it would not last very long. The Gothic Revival, of course, was begotten of the romantic writers—Horace Walpole, Sir Walter Scott, and, later, Tennyson—rather than of architects. He would like to protest against

coupling of Keble College with Eaton all as "essays in the ungainly." Despite defects, the proportions of Keble College were fine; the chapel over was able in conception, and the work of a genius—though probably of a genius he was wrong. The Parkes Museum, with its high-pitched roof and variegated slates, is still more violently un-Oxonian. The Gothic devotees—Butterfield, Bodley, Sweet, and Pearson—all had considerable scholarship, and all were convinced of the quality of the Gothic renaissance. Newt, continued the speaker, was practically and; after a short dalliance with its gggly abominations, we had steadied down to a saner and, he thought, more indicated view of the meanings of architecture. There was at present a tendency among the weaker brethren to borrow from France—a dangerous practice if the fashions were not translated into English. The benefits of this borrowing were proportion and refinement. Men of long bent would express their personality in spite of it—genius could always take care of itself; but they had to consider the average man, the mildly contented, for whom the architectural look was difficult, if not obscured. The best constructive training and refined modeling in expression, he thought, would help the architectural student to avoid the many pitfalls presented by the facilities of modern methods, the steel and reinforced-concrete aids to constructive disabilities. He was not pessimistic; he believed there was hope, and, though hope, in the steadily growing consensus of architectural opinion. That Hampstead Garden suburb was exerting influence upon its surroundings, was a parent from the better class of house; it was springing up in the immediate neighbourhood.

Mr. H. H. Statham, seconding the speaker of thanks, said that the paper was a difficult one to comment upon. With regard to Street's Law Courts, the speaker was not in the detail or the style, but in defective planning. The Great Hall, intended as a *salle des pas perdus*, was put on a wrong level and was always empty. He had to dissent from Mr. Street's statement that architectural beauty was only skin-deep. He (the speaker) thought that architectural beauty was out of the plan. Ruskin's "Seven Upstarts," of course, was full of propositions which would not bear examination; and he would not advise anyone to take all its things as gospel. With respect to modern methods of building, they could expect to get good architecture and good building done in a hurry. He remembered an American architect saying that in his country complete drawings were frequently wanted within a week; an architect protested against the time the client would say he would go where where he could get them in time. It appeared to him (the speaker) that this would account for the prevalence of the Classic style in America, its main features being more or less photostyped and ready for use. The speaker, he thought, was beginning to doubt that the architectural shop would survive in the long run. The shopkeepers protested against Mr. Norman Shaw's shops in the Regent Street quadrant, but, when the shops were now occupied, it did not seem that they had overcome their objections to the architectural shop. Referring to domestic architecture, Mr. Statham said there was no longer nowadays to build high-pitched roofs. He would like to see a garden city with

flat roofs; for this was really the most practical method of roofing. Windows, also, were usually much too small for hygienic conditions.

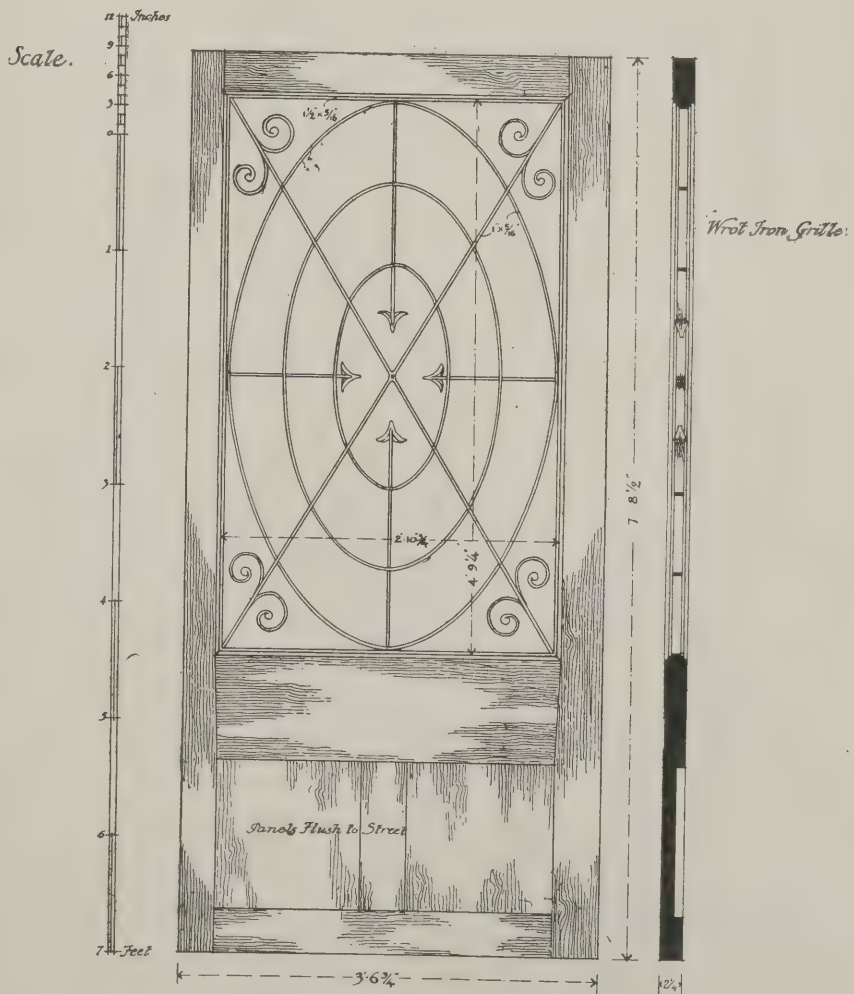
Mr. Arthur Keen said that Mr. Eden had not done full justice to the Gothic Revival. The Gothic Revival was not Gothic at all; but work was produced which possessed the qualities of really fine architecture. This was especially the case in church work, such as St. Alban's, Holborn, and St. Matthias, Stoke Newington. The Gothic Revival, he could not help thinking, was a mistake, for it left men who forged not only architectural design but craftsmanship also. Such work could not be sufficiently strongly deprecated. The present Georgian revival, he thought, was justified, because it was enjoyed and appreciated by the people. It seemed to him that architectural unsettlement was inevitable. We should never settle down, for any length of time, to what could be called a national style. Things now moved more rapidly than before, and the arts would

have to fall into line with the spirit of the age. He thought that before long Socialistic principles would obtain generally, and architecture would become officialised; it would therefore have to be developed on academic lines.

Mr. A. E. Richardson said the nineteenth century produced enormous commercial activity throughout the world, and a corresponding activity resulted in artistic circles. Mr. Eden spoke of a "Greek Revival," and also mentioned "mutterings of a second Greek Revival"; these statements in particular needed explanation and correction. The development of English Classic architecture properly commenced with the building of the Banqueting Hall by Inigo Jones; thence it was continued by Sir Christopher Wren and other architects until the first quarter of the eighteenth century. From 1730 the Palladian character of the vernacular style was blended with a more precise knowledge of Roman architecture. Following this came the researches of the Dilettante Society and the publication

N^{os} 121 & 122 FLEET STREET, LONDON.E.C.

Gate to Common Entrance Passage from Fleet Street.



This gate is, we believe, to be demolished shortly. Though of quite simple character, it is sufficiently interesting to be worthy of record.

of Stuart and Revett's great work. This occasioned the Græco-Roman phase, which, in turn, during the first quarter of the nineteenth century, developed into a purer Greek manner. The giants of the nineteenth century—Cockerell, Elmes, Barry, and Pennethorne—initiated a modern Classic development. They fused the preceding phases of English Classic with Italian and French *motifs*, and brought about the Neo-Grec and Italian culmination. In this connection practically the last building in the monumental manner to be erected in the United Kingdom was the Harris Library at Preston, completed in 1896. Thus the earlier Classic of Inigo Jones and Sir Christopher Wren, nourished by the researches of Englishmen in Greece and Rome, had continued for nearly three hundred years. Therefore, it was fallacious to speak of "revival." The fact that the practice of Classic architecture had been continued so long in this country was sufficient proof of its being the best medium for modern academic expression. The hope of modern architecture lay in the furtherance of a cosmopolitan style; insular prejudices had to be forgotten and a broader view taken of the changed conditions of life. If Sir Christopher Wren had not availed himself of the opportunity of peeping over the shoulder of "that crafty old Italian fox" Bernini, it was possible we should not have had such a fine building as St. Paul's Cathedral.

Mr. V. T. Hodgson said he thought Mr. Eden was hopeful. His hope was in a Gothic revival.

Mr. Alan Potter said that if he had one thing greater than fear for modern architecture, it was hope for the future. The chief trouble was that we knew too much about the past, and thought too much about the present. Military education required the study of military history, not for its ancient tactics, but for the development of new ways of getting out of modern difficulties. Architecture should be studied in the same way. People of the thirteenth century did not study Saxon work; they studied the very latest work, and tried to improve upon it. We too had got to study modern work if we were to overcome the problems of our day.

Mr. C. C. Brewer said that the modern competition system was producing a body of fine planners, and therein he saw a hope for the future. We had given up thinking of elevations and thought only of plans.

Mr. Curtis Green said he had long recognised Mr. Eden as one of the few men we have ahead of their time. The paper, he continued, separated the artist from the Philistine without the latter being aware of it. It was a paper full of golden silences; the reticences of the good craftsman. If he were right, Mr. Eden regarded any recent improvement in our architecture as due to our increased knowledge and respect for the past. He detected in Mr. Eden's view three hopes for the future: (1) Tradition; (2) enthusiasm; and (3) definite principles.

Mr. F. C. Eden, in reply, said he was not so pessimistic as he apparently was thought to be. With respect to Keble College, he had spent four years there, and he still thought that, with the exception of its proportions, it was all wrong. Mr. Eden then drew a comparison between a building and the human form in support of his contention that architectural beauty was only skin-deep.

NOTES ON PAINTING AND DECORATION.

BY ARTHUR SEYMOUR JENNINGS.

Experiments in Proposed Substitutes for Linseed Oil.

Some very interesting and practical tests of paints are being made by the Institute of Industrial Research, Washington, D.C., in conjunction with the American Society for Testing Materials. This Institute issues from time to time bulletins or pamphlets containing a record of results obtained by exposure tests. One just received deals with practical testing of drying and semi-drying paint oils, the tests being undertaken in consequence of the long-continued high price of linseed oil. Forty-eight white pine panels were painted with a standard white pigment formula reduced with a different oil formula for every panel. Each panel was constructed of four tongued and grooved planed boards 22 in. long, 1 in. thick, and 9 in. wide. They were painted before being fitted in position during the month of April, when the temperature varied from 60 to 90° F., and the paint was allowed to become thoroughly dry before the various paint mixtures were applied. It is interesting to observe that the standard pigment selected was not pure white lead only, but a composite paint made up as follows:—Pure white lead (hydro-carbonate) 20 per cent., sublimed white lead 30 per cent., zinc oxide 35 per cent., magnesium silicate 10 per cent., barytes 5 per cent. The 100 lb. pigment base was ground to a stiff paste in 16 lb. of linseed oil. Various oils and mixtures of oil were then added to thin the paint to a state fit for application, the pigment being the same in all cases. Among the oils thus tested were raw linseed oil, soya bean oil, Medhaden oil—both the last two being mixed without linseed—mixtures of 25 per cent. of raw and 75 per cent. boiled linseed oil, and various other proportions; blown linseed oil, corn oil, cotton-seed oil, were also used. The report shows that the oils in drying increased in weight, and that the greatest increase in weight occurred during the period in which the oil dried to a firm film, which was in most cases within 48 hours.

Times of Drying of Various Oils.

Space will not permit of all the results being given here; but a few may be mentioned. Boiled linseed oil dried in two days. Blown linseed oil proved difficult of application owing to its thickness, and dried in less than two days to a smooth film; mineral oil at the end of the nineteenth day was found to have lost in weight on account of the presence of volatiles, and no drying action was observed. A mixture of 20 per cent. mineral oil with 80 per cent. raw linseed oil—the film remained tacky until the end of the eighth day, after that a fairly firm film was shown. Soya bean oil when used by itself was fairly firm after the fourth day, but when mixed with 80 per cent. of raw linseed oil it was firm at the end of the second day. Cotton-seed oil showed very little hardening, and the same is true of corn oil. Sunflower oil was fairly firm at the end of the third day. Medhaden oil and Chinese wood oil gave very fair results.

The same pamphlet contains a separate report on paints suitable for steel. Plates were painted in October, 1908, and have been exposed on the seashore since. On June 28th, 1911, they were examined, and ratings were given to each panel according to the amount of rust apparent

on the painted surfaces, as well as the degree of checking, chalking, scaling, cracking, peeling, loss of colour, and other signs of paint failures shown. Observations were made by four different experts and an analysis of averages showed chrome scarlet to give the best result, being placed at the top of the list. Next came chrome green of a blue tint, the zinc and lead chromate, zinc chromate, zinc and barium chromate, magnetite, black oxide, sublimed white lead, Prussian blue, etc. Venetian red had an average percentage of 8 per cent. as against 10 per cent. for the highest, sublimed white lead. Among the paints which proved to be utterly useless, or nearly so for painting steel, were calcium carbonate, whiting, ultramarine blue, and chrome resinate oil. Boiled linseed oil without pigment was used in three coats, and only gave the average of 1.5. Thus it is clearly shown that oil by itself is useless for protecting metal, and that soya bean and Medhaden oils may be employed in proportion of less than 25 per cent. with good linseed oil without the drying of the paint film being retarded.

The Smell of New Paint.

Freshly applied paint is always more or less objectionable, and ladies and others of delicate constitution sometimes suffer in health in consequence. The "Lancet" some years ago pointed out the danger to those persons who are sensitive to the vapours of paint, and what is the same thing, to the turpentine and oils contained in the paint, as advised those who are so affected to resign their home until the drying influences of the air had dissipated the volatile oil. There is possibly increased danger when white lead is used, from the lead emitted, although this has not yet been absolutely proved. A well-known scientist shows some time since, that he had by means of the spectroscope obtained traces of lead being thrown off from a newly painted surface. Whether this occurs in sufficient quantity to cause injury to health has not been determined. It is not so generally known as it might be that zinc paints such as zinc oxide and zinc sulphide when used as paint, do not possess the characteristic smell of lead paints. This should be so has not yet been made clear, but possibly the smaller amount of turpentine used to some extent explains it. As to the remedies, bowls of water—or, better still, of milk—are recommended by the "Lancet" as giving some assistance in the matter. These are exposed on the floor of a room which has just been painted, and they appear to absorb some of the fumes given off, and can be easily proved by the paint emulsions showing on the surface of the water so exposed. Fresh milk reduces the smell of paint in a room in a remarkable way. Juniper berries burnt in a room are said to assist in this matter, the fumes given off probably only disguise those of the paint. Fresh hay is also recommended, as well as oil of birch wood tar.

Paint Solvents.

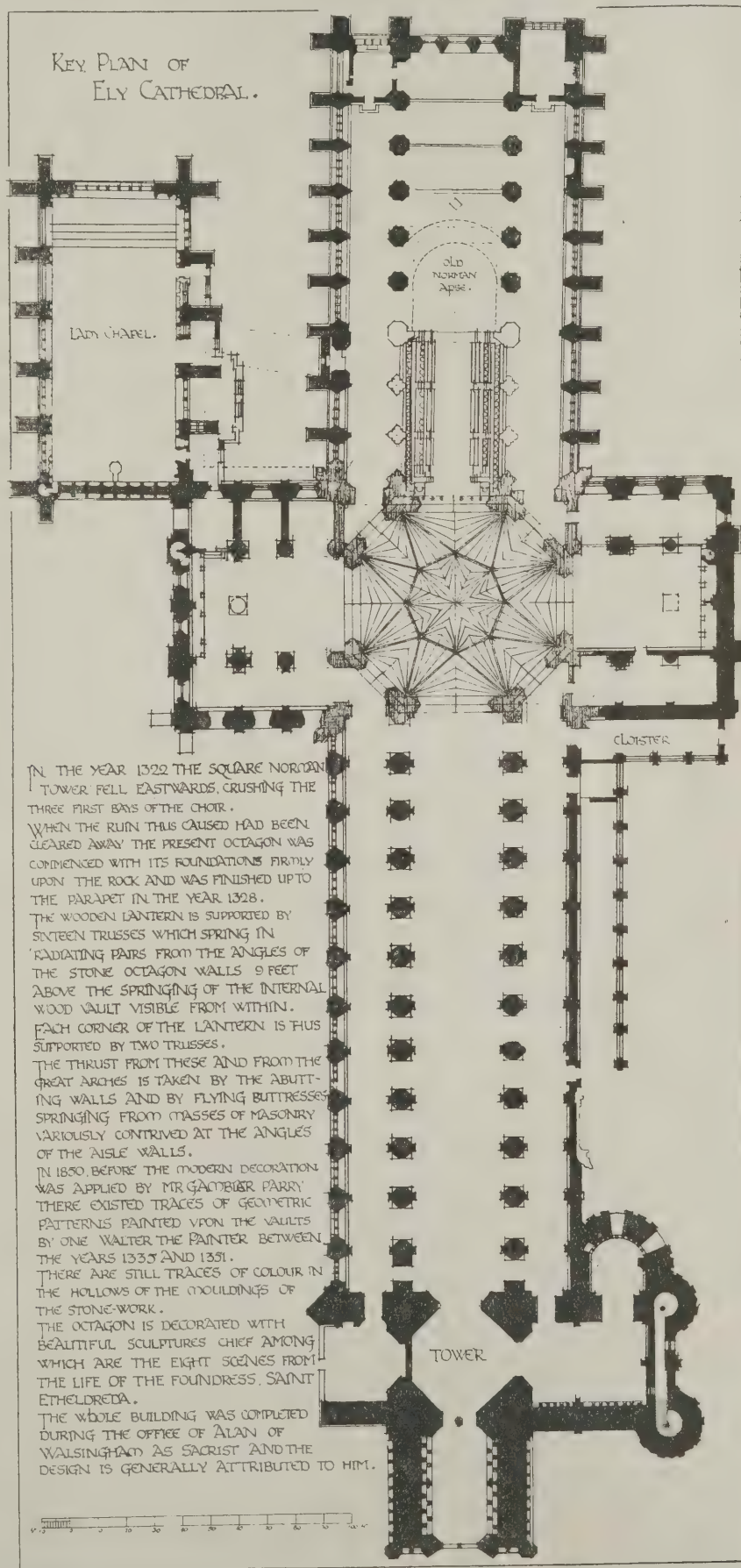
Judging from the many paragraphs that appear from time to time in the trade press, there seems a great deal of misunderstanding among builders and architects as to the best materials for removing paint or varnish. It is perhaps four or five years ago, paint

usually burnt off, or, rather, softened by heat and then scraped off, or was softened by the application of a material consisting of either soda or potash mixed with quicklime. The chief objection to the burning-off process is that it is likely to cause the sharp angles of the moulding, etc., to be charred. The fumes arising from the burning paint are very objectionable, particularly when inside work is being dealt with, while there is undoubtedly no little danger to the workman who is compelled to inhale the bad fumes. Various alkali softening mixtures which are still used to a considerable extent are likely to injure the hands and the brushes also; they tend to raise the grain of the wood, and this objection is increased with the use of water necessarily employed in washing off. However carefully this is done, there is still a certain amount of alkali left on the surface, so that in practice it is necessary to apply a coat of dilute acid, such as vinegar, before the new paint is applied. There are, however, literally dozens of paint solvents which are wholly free from the objections named. Several of these have been on the market for some years, and they consist for the most part of acetone, benzol, or benzine, and in some brands a hard wax, such as carnauba, permacet, or paraffin wax, is added in order to yield a paste which will hold and prevent too rapid evaporation. Paint solvents of this class do not injure the hands or brushes, but soften the paint or varnish in a very short time, and it may then be scraped off, and the surface rubbed clean by means of a piece of rag dipped in a little turpentine or benzine, when the work is ready for re-painting. Speaking generally, it will be found that burning off is economical for outside work, but that a paint solvent is best for work that is to be done inside.

adding to the site an additional area of 22,000 sq. ft.

That part of the work which had to be carried out in close proximity to the abutment of Westminster Bridge, built in 1862, presented a special problem. The abutment on the Lambeth side of that

bridge was originally founded on timber piles, but the depth to which the foundations for the new river wall were carried made it necessary to go below the bridge foundations. To avoid the risk of damage to the bridge it was decided that the abutment likely to be affected should



LONDON'S NEW COUNTY HALL.

The King, in laying the foundation-stone of the new London County Hall on March 9th, will initiate the final stages of the undertaking. Illustrated descriptions of the building have already appeared in the Journal, but at the present stage it will be interesting to recall a few salient particulars, which are reproduced from an article in the "Times," in which the engineering features of the work are detailed.

The total cost of the whole scheme in its original form, including the cost of land and buildings, a reclamation scheme on the river foreshore, the building of an embankment wall, and the erection of the hall, was estimated at £1,700,000. The plans have, however, been modified in certain details, with the result of reducing the total outlay.

The course of the Thames at this point being almost due north, and the site being parallel to the river, it was easy for the architect to provide façades with south, east, and west aspects, thus securing a maximum of sunlight for the council chamber, committee-rooms, and principal offices.

A great deal of preparatory work was required before the site was ready for the operations of the builder, it being necessary to enclose the area on the river frontage by an embankment wall 588 ft. long, and to reclaim from the foreshore of the Thames about two acres out of the five and a half acres included in the site. The line finally adopted for the embankment wall was a curved one, which had the effect of setting the wall forward, and

be entirely enclosed in steel sheet piling. As an additional precaution, a specially designed caisson, shaped to fit the pointed cutwater of the abutment, was sunk under compressed air and sealed with concrete, to form the foundation for the 47 ft. of the embankment wall next the bridge. This operation was successfully accomplished without causing any disturbance to the bridge abutment, and allowed the remainder of the work to be carried out by more normal methods.

After the construction of the cofferdam the building of the embankment wall was a comparatively simple task. About 800 ft. of wall would be required to enclose the whole side, but although only 588 ft. of wall has been actually constructed, provision has been made by the building of a temporary timber structure for the extension of the embankment. The river wall has been constructed in cement concrete faced with granite ashlar work, Aberdeen and Cornish granite being used for the ornamental parapet. A pleasing architectural feature of the new embankment is furnished by the centre

flights of steps. Behind the wall a series of arches has been constructed for storage purposes. Mr. E. H. Tabor acted as resident engineer for this work, for which Messrs. Price and Reeves were the contractors.

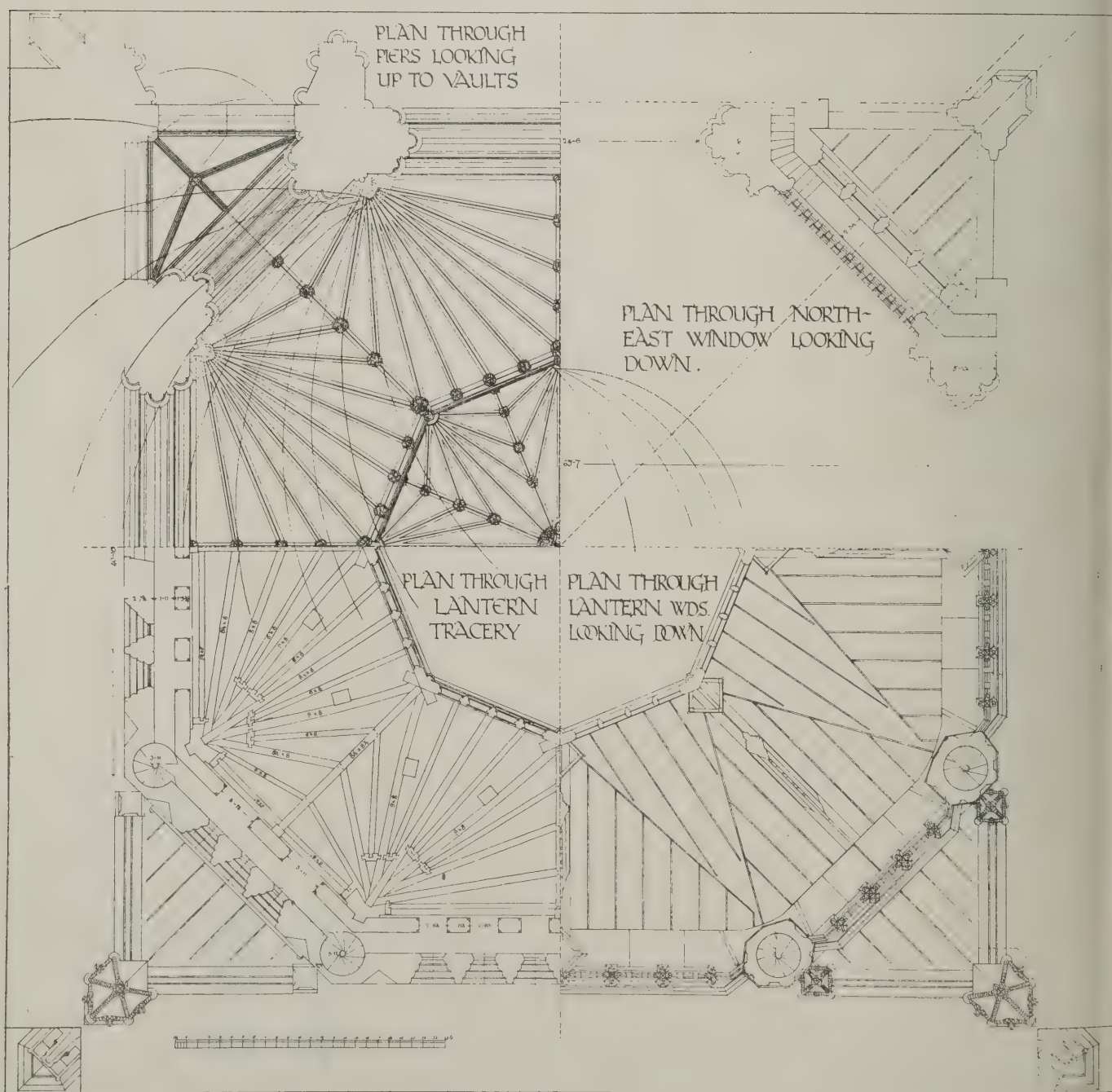
The preparation of the foundations for the hall went on simultaneously with the building of the embankment, a separate contract having been let to Messrs. F. and H. F. Higgs. The first work was that of demolishing the buildings which occupied a portion of the site. Preliminary boring operations showed that the strata included 12 ft. of made ground, 7 ft. of Thames mud, and 13 ft. of ballast lying over the London clay, and the plan adopted was to provide a Portland-cement concrete raft laid on top of the ballast formation. There were several advantages in this method, but it necessitated a good deal of excavation, and had the effect of placing the foundations considerably below the level of Belvedere Road. The engineering plans therefore included the provision on the unprotected south and east sides of the site of concrete retaining

walls with a base thickness of 10 in., tapering to 4 in. at the top. The embankment served the purpose of a retaining wall on the river side. On the watertight box thus built the new County Hall was erected.

The hall itself will be a building of nine storeys, 750 ft. long and about 320 ft. in width.

THE OCTAGON, ELY CATHEDRAL

The magnificent Octagon of Ely Cathedral is shown in this issue by some excellent measured drawings, which gain for Mr. A. B. Allen this year a certificate of honourable mention in the competition of the Royal Institute of British Architects. The perspective reproduction on page 238 and the section and elevation given as the Centre Plate in this issue, especially well done, being examples of accurate draughtsmanship combined with a sense of artistic effect. Particulars of the construction will be found on the plan published on the preceding page.



THE OCTAGON, ELY CATHEDRAL. MEASURED AND DRAWN BY A. B. ALLEN.

A CENTURY OF BUILDING.*

BY MAURICE B. ADAMS, F.R.I.B.A.

In a rapid review of the history of architectural developments from the reign of George IV. down to that of the present monarch, Mr. Maurice B. Adams recalls many interesting facts, and briefly summarises the careers of many outstanding personalities.

THE manners and morals of the age whence we are starting had degenerated, and times were not particularly brilliant in 1821, when the "First Gentleman in Europe" ascended the throne, so in order to take our bearings it is requisite to glance back even so far as Stuart days to adjust properly the antecedents of Early Victorian art. Evolution in design had spent itself by the time of George III. No tradition worth mentioning remained, and our most accomplished achievements henceforward were due to individual example. Academicalism had reigned long enough. "The Neo-Classic period," which has been divided thus, extended from 1666 to 1820: the Formative period, from 1666 to 1720; the Palladian period, from 1720 to 1760; and the Formal school, which ended in 1820.

The Great Fire.

War and fire have generally contributed to the advance of architecture, and since the era of the Middle Ages the one outstanding event which had the most immediate influence upon subsequent building art was the Great Fire of London in 1666. Wren thus was given his opportunity. The second conflagration to be mentioned as of architectural import was the burning of the old Houses of Parliament in 1834. These two events coupled in this way define the beginning and the end of the "Neo-Classicism" of English building.

The Gothic Revival.

Till the turn of the tide of fashion towards the closing years of the last century indigenous architecture became associated more or less with the "Gothic Revival." So little attention, indeed, was devoted fifty years ago to Classic work, that no one could have thought it probable that the praise of Soane and his school would find expression in the early days of the twentieth century. Belcher and Macartney's book on "The Later Renaissance" helped to bring about this swing of the pendulum. Long prior to the Georges, beauty, colour, and grace had succumbed to the Puritans, the Revolution, and the iron hand of Cromwell. Dress had become sober, the cut of its lines was formal, faces wore a hard expression, and, as materialism gained the ascendancy, enthusiasm had become associated with what was thought "bad form," and art was glacial. Houses were grey, with flat roofs and hopelessly dull interiors, although some of the better sort exhibited a somewhat architecturally contrived plan, recognising vistas by making one room lead out of the other.

The "English Style."

A reaction so early as the dawn of the nineteenth century evinced signs of activity; but so little was mediæval art comprehended that it was generally spoken of as "the English style," ignoring the historic art of Europe. Wyatt was building Fonthill Abbey, known as "Beck-

ford's Folly," on an enormous scale, with puerile and petty detail; but an advance was registered when John Shaw erected the clever church of St. Dunstan-in-the-West in Fleet Street, and added a respectable deception to Christ's Hospital in so-called "Gothic." The new courts of St. John's College, Cambridge, described as "a monstrous pile of ugliness," were put up by Thomas Rickman the Quaker, to whom we owe the invention of the nomenclature of the English periods of architecture in his "Attempt to Discriminate," published, with "The Classic Orders" as a preface, in 1819. Porden had built Eaton Hall, and Atkinson, a pupil of Wyatt, carried out "Abbotsford" for Sir Walter Scott. Augustus Pugin with Le Keux informed and educated the public by their illustrations of Normandy and other mediæval work, thus paving the way for the turbulent crusade against Pagan inconsequence so vigorously undertaken by Welby Pugin, whose graphic "contrasts" and "true principles" did so much service later. His energy was attributed to what "Classicists" called his "Whimery," while his critics applied to him the sobriquet of "Smell-fungus," and so "the battle of the styles" began.

Prout and Piranesi.

But what man of his century dreamed of the exquisite beauty existing in the neglected smaller Tudor and Stuart-built dwellings of the husbandman before Prout made his brown-ink and reed-pen "dotted and blotted sketches"? Piranesi, no doubt, and Rembrandt too, with such studies as his "Mill," had extended influences, like Cotman and others, towards a truer appreciation of the higher forms of architectural picturesqueness, and Piranesi's Baroque compositions told in an imaginative direction. "The Beauties of England," edited by Britton and illustrated by Prout, fulfilled a mission in the way I have indicated, at a time when our forefathers displayed an intense ignorance of architecture.

Piranesi had a hand in illustrating the famous book by Adam on "The Palace at Spalatro," issued ten years anterior to the birth of Prout, when Bartolozzi did the engraving, but this work was beyond the range of ordinary people. At this time in France the reign of sound and considered Classic, inaugurated by François Mansart, who flourished at the same period as Inigo Jones, had well-nigh run its course, and things were shaping architecturally towards the chilly, pompous style of the Empire, which in a way was based on Palladian lines. Wood of Bath and Le Roy of Paris exemplified the spirit of refinement in design which found expression in France by the buildings designed by Gabriel, also in London and Edinburgh by Robert Adam, the most tasteful architect of his day, but his manner for varied reasons failed to find many imitators. The Adelphi Adams were extensively engaged at the time by the nobility, and by speculating, too, on their own account. Thus they enjoyed opportunities denied to Stuart and Revett, while Joseph

Bonomi only had a restricted practice, in which his skill was always manifest.

The London Squares.

Thomas Leverton did more, and was associated with the lay-out of London squares. Sir John Soane, the master of commonplace Greek, and Professor at the Academy, designed a scheme for the House of Lords, was much in favour, erected the Bank of England, and left a most excellent museum. John Gandon, pupil of Sir Wm. Chambers, displayed a much higher capacity when he won the competition and built the Custom House and Four Courts at Dublin.

Brighton Pavilion.

The culminating extravagances of George IV. were encouraged by John Nash when building the Regent's fabricated plaster palace, known as the Royal Pavilion, Brighton. This vogue for extraordinary diversions was thus exploited, but it was not all vulgar, and many of the appointments in glass, both in form and colour, were most clever; also the grotesque gilded carvings in this seaside palace were in their way excellent.

Work in the West End.

A few West End residences of the same decade as S. P. Cockerell's mansion for the Bishop of London, in St. James's Square, show the same distinction, but there was a prosaic order and colourless proportion about the decorous façades. James Wyatt, flattered by Walpole for his Gothic work, following up the Græco-Italian style, designed the "Pantheon" in Oxford Street; and Wyatville, R.A., invested, amidst Edwardian surroundings, the incongruities of the Empire style at Windsor. His diploma drawing at Burlington House, showing a bird's-eye outlined view in vista of a mansion for the Earl of Yarborough, dated 1826, is no mean performance. W. Wilkins, R.A., built the National Gallery in 1832, and the British Museum, by Sir Robert Smirke, was commenced in 1823. John Dobson, of Newcastle-on-Tyne, erected the famous station there, and laid out the town for Thomas Grainger. Dobson, by the way, was the first architect allowed to exhibit a coloured drawing at the Royal Academy. Up to 1815 architects had to be content with black-and-white drawings.

Soane's Churches.

Whatever niche may be accorded to Sir John Soane in architectural history, he will not be best remembered by the box-like galleried tabernacles which he put up. St. Peter's, Walworth, filled him with such pride that he reproduced it later at Holy Trinity, Marylebone. The church was one of his best, and Walworth, in 1824, when it was built, ranked as a fashionable suburb for the residences of merchants. Having had to alter the interior and re-seat it, I may mention an amusing incident. It so happened when Soane put up the organ in the west gallery the ceiling proved too low to allow of the bigger pipes being erected, consequently a sufficiently big hole was cut out in the plaster to give the pipes head room, and for over seventy years their volume of sound expended itself in the roof midst the owls and the bats, and no one below a penny the wiser! I only ascertained the fact when the organ was removed to the choir end of the church.

The Inwoods, Wilkins, Barry.

St. Pancras parish church, by the Inwoods, in 1822, famous for its Greek

*Extracts from a paper read before the Glasgow Institute of Architects, February 14, on "Architects from George IV. to George V."

style, of course leaves Soane miles behind; but then St. Pancras Church cost £100,000, and Marylebone Church cost nearly as much. University College, Gower Street, by W. Wilkins, dates from 1827. Two years later the Travellers' Club displayed a remarkable departure by Sir Charles Barry, who had then returned from Italy fully impressed with the Farnese Palace, and Wolfe, a pupil of Gwilt, had systematised his method of study, inducing him to forgo his fancy for Egyptian hieroglyphics covering mural surfaces with enrichments. Thus inspired from Italy, Barry also designed the Reform Club in 1837, and Bridgewater House in 1847. His early taste for redundant ornament reasserted itself in Barry's Gothic work.

Public Buildings.

Liverpool was ennobled by the building of St. George's Hall, H. L. Elmes, a pupil of his father, being its architect, who died early. By his last wish Professor Cockerell finished the building. Cockerell, foremost as a brilliant "scholar architect" and exponent of the higher school of the theoretical Classic, erected the Taylorian Building at Oxford. George Basevi carried out the structural shell of the noble Fitzwilliam Museum at Cambridge, and laid out Belgrave Square. Hyde Park screen, witnesses to the refinement of Decimus Burton, the architect of the Athenæum and United Service Clubs, Pall Mall. Sir William Tite commenced the Royal Exchange in 1844, which, it is said, owned a natural parent not recorded in the register. The west side of Somerset House was added a little earlier by Sir James Pennethorne. A considerable influence on façade treatment about this time was due to stucco.

Professional Charges.

As Government architects, John Nash, Sir John Soane, and Sir Robert Smirke had a retaining salary of £500 a year, and when any work of consequence was done they were paid 3 per cent. on the total cost of the building which either of them had to do with. At Buckingham Palace Nash was paid 5 per cent. after 1826, when the salary was dropped, and Blore had the same when he built the last front in Buckingham Palace Road. Wyattville received 5 per cent. for his Windsor Castle job, but that included the cost of coaches to and from Windsor. This expense must have been a considerable item for a man of his style and the conditions of travelling then. Sir Charles Barry made a bad bargain over his fees for the Houses of Parliament, having at the initial stage of his appointment agreed to a fixed fee of £25,000, but at that time the estimated cost was £800,000, exclusive of fittings and furniture, whereas the cost came to about £1,600,000, and the work took almost a lifetime to execute. Pugin was paid £200 a year by the Government to help Barry, who up to 1849 had furnished between 8,000 and 9,000 drawings. He also paid for some 3,000 casts of mediæval ornament. Ultimately, after years of negotiations and petty wranglings on the part of various Ministers of State, he had to be content with £25,000 and percentage grudgingly added for measuring and on the cost of various heating projects which had given the architect endless trouble. Other architects were paid 5 per cent., as in the Pavilion at Brighton, British Museum, National Gallery, and Kensington Palace. Sir Gilbert Scott's fees on the Home and Colonial Offices in Whitehall were 5 per cent., but he had to prepare several

schemes to satisfy Lord Palmerston, who obliged him to give up the Gothic design by which he won the competition in 1856 as settled by a Commission. The awards really were in favour of H. B. Garling for the War Office, and Coe and Holland for the Foreign Office; Scott being put third, while Sir Digby Wyatt was put in for the India Office. The cost of the Law Courts in the Strand came to £871,966, on which amount G. E. Street was paid £35,000, or about 4 per cent.

Progress of Gothic.

The Gothic Revival, as we have already said, was a tangential departure, and not an evolution by which in imperceptible degrees one style grew out of another. Pugin, with his doubtful analogies, and Ruskin, with his false taste for naturalesque sculpture in ornament, had at least instructed and roused public opinion. Time, and the erection of the new Palace at Westminster, aided by the Oxford Movement, opened up an opportunity for newer notions. Religious worship inspired the pious poems of John Keble, and the Tractarian influence of Froude, Newman, Pusey, and Hope gave a progressive power to church and college building. James Savage had some time before built St. Luke's Church, Chelsea, 1824; St. Peter's Church, Brighton, by Charles Barry, followed, in 1826; and J. C. Buckler designed Costessy Hall, Norfolk, 1825.

R. Abrahams had built the Middle Temple Library, Welby Pugin had designed St. George's Cathedral, Southwark, in 1845; while in the same year the Church of St. Stephen, Rochester Row, was built by Benjamin Ferrey, the year following the erection of St. Andrew's Church, Wells Street, by S. W. Dawkes. The Hall and Library in Lincoln's Inn Fields, by P. Hardwick, date from 1843, though it is said he did not really design them. When the Government advertised the Houses of Parliament competition in 1835 the conditions prescribed "Elizabethan or Gothic." Four premiums of £500 each were offered, and ninety-seven competitors sent in plans. Charles Barry won the prize, and was forty years of age when King William IV. confirmed the award of the Commissioners and elected him architect early in 1836.

While Pugin was busy in 1837 with the drawings of the new Palace at Westminster, "in the composition of the river front," the centre wings and tower, he was engaged in erecting St. Mary's College, Oscott, and Scarisbrick Hall. His first church was St. Mary's, at Derby, and he carried out work all over the United Kingdom. The Pugin Travelling Studentship, founded by subscription at the R.I.B.A., was first held in 1865, by Mr. Tavenor Perry, who built part of the Hotel Cecil, facing the Embankment.

Sir G. G. Scott.

Sir George Gilbert Scott, at the outset of his career, erected many workhouses and such-like buildings, as did other Gothic celebrities, like S. W. Dawkes, who had erected Colney Hatch, and Benj. Ferrey, who built Dorset County Hospital in 1839. Scott was articled to Edmeston in 1827, and in 1834 helped Kempthorne, an expert in workhouse projects, after serving a time with the builders, Peto and Gissell. Scott's connection with Moffatt began in 1835, after which the firm went in seriously for Poor Law enterprises, and carried competitions before them with business-like foresight in such a way as to obscure some other considerations. Influenced by Storer's "Cathedrals,"

which came out in 1826, Scott turned his attention subsequently to mediæval work.

[Scott's work was reviewed at considerable length, and the lecturer did not fail to mention that it was Scott who, in 1851, founded the Architectural Museum.]

Architectural Institutions.

The professional societies of architects must not be overlooked. The first date from 1806, with John Woods, architect, George Yard, Lombard Street, as president. James Savage and James Elmes were the vice-presidents, Mr. Bushe being the secretary. Every member was expected to present annually an essay on a subject connected with civil architecture, or forfeit half a guinea.

The Royal Institute of British Architects was constituted in 1835, and incorporated in 1837. Its genesis may thus be briefly stated. On January 8th, 1833, a meeting took place, in Freemason's Tavern, of architects and surveyors, who found an architectural institution. Mr. Elmes took the chair at a subsequent meeting on the 13th of the same month when it was agreed to term the institution "The Society of British Architects." In 1835 "the Architectural Society," instituted in 1831, only numbered fifty-one members at 35, Lincoln's Inn. Mr. Bernard Clarke was the president. In 1838-9 Sir William Tite was president and Richard Halliwell honorary secretary. The Society of Architects and Surveyors and the Society of British Architects formed a coalition in 1842. The first meeting of the Institute, however, met at "The Thatched House Tavern," Strand, James's Street, in July, 1834. The opening general meeting was held in July, 1835. The Society of Architects in its revived form was started in 1884.

William Butterfield.

William Butterfield is first found recorded as a student member of the Society of Architects in 1831, at the age of seventeen, but he joined no professional body after, and only agreed to accept the Royal Gold Medal of the Institute in 1884 as deputy. His influence was considerable and his work masterly. The College of St. Augustine at Canterbury, built in 1845, was his first important building. All Saints' Church and Clergy House, Margaret Street, five years later, revealed the possibilities of brick, and created much controversy. St. Matthias', Stoke Newington, Balliol College Chapel, Oxford, and St. Alban's Church and Clergy House, Holborn, 1858, displayed his genius. Keble College, Oxford, was erected in 1867. Not one of Butterfield's contemporaries evinced more originality or less regard for convention. He invented the "streaky-bacon style" of partially coloured brickwork, and was so enamoured of his patternings, that finding creeper growing on the walls of one of his buildings, he had them cut down and concrete added round the footings to prevent any such growth hiding his work in future.

J. L. Pearson, J. P. St. Aubyn, James Brooks.

John Loughborough Pearson, R.A., was equally original, and produced buildings unsurpassed by any man of his time. The spire of his first London church, Holy Trinity, Bessborough Gardens, 1852, is a most beautiful structure seen from any point of view; and St. Peter's, Vauxhall, the first modern church vaulted throughout in brick and stone, 1864, set an example for many others to follow. St. Augustine's, Kilburn

St. John the Evangelist, Red Lion Square, St. Michael's, Croydon, St. Agnes, Liverpool, St. Matthew's, Northampton, and St. Stephen's, Bournemouth, as well as Hove Parish Church, not to mention Truro Cathedral, suffice to distinguish Pearson as a master of the first degree, combining a study of Continental work with a recognition of English tradition, and as a church-builder fully realising the requirements of a modern church. The Catholic Apostolic or Irvingite Church at Maida Vale was one of his latest buildings. Raphael Brandon's church in Gordon Square, for the same body, opened in 1854, has never been surpassed for its similitude to a mediæval building of cathedral-like proportions. Mr. John Belcher supervised the Early English carving of the capitals of the interior a few years ago.

J. P. St. Aubyn was among the first English architects of the Gothic revival to recognise the importance of local modes and texture, his church work in Cornwall being studied in this way.

The series of churches built by James Brooks rise to the level of high distinction. He built, in East London, St. Michael's, Shoreditch, St. Chad's, Haggerston, and St. Columba's, Kingsland Road, during the 'sixties; and the Hospital of St. Mary at the Cross, Shoreditch, and St. Saviour's, Hoxton, St. Andrew's, Plaistow, and St. Mary's, Hornsey, in which church Brooks tried his hand at the last phase of Gothic—the Perpendicular. St. John's, Holland Road, is one of Brooks's most noble buildings.

Bodley and Burges.

G. F. Bodley, R.A., stamped everything which he did with the utmost refinement and distinction, as well as much originality, which would have graced any period of architecture. St. Michael's, Brighton; All Saints', Cambridge; the Church of the Holy Angels, Hoar Cross; St. Augustine's, Pendlebury; St. Mary's, Clumber; St. John's, Cowley, Oxford; St. Edward's, Holbeck; and Holy Trinity, Kensington, give an abstract of several remarkable examples of beauty and reserved power. River House, Chelsea, the School Board Offices on the Embankment; Christ Church Buildings, and St. Swithin's Quadrangle, Magdalen College, Oxford; King's and Queens' Colleges, Cambridge; and Washington Cathedral must suffice. His character was as charming as his work, and no one had a wider experience in perfecting design in the applied arts. Part of the work mentioned was done, of course, in conjunction with Thomas Garner. Bodley's reredos at King's Lynn is only one of similar erections of his. When he was elected A.R.A. he told me his works sent to the R.A. for exhibition were refused by the Council because they said his share of the designs must pass without question, and Mr. Garner's share of them must be judged. This absurd contention much amused Bodley. William Burges's wonderful house at Melbury Road is worthy of belonging to the nation. William Burges joined H. Clutton in a competition for Lille Cathedral in 1856, which they won. Street took the second prize.

The church at Lille is a wretched building, boiled down from Burges's and Street's designs, and erected by a local man named Leroy, Burges and Clutton have been got rid of. The designs of William Burges were always thorough, including the most minute detail. Cork Cathedral, his churches at Skelton and Studley Royal near Ripon, Cardiff Castle, St. Faith's, Stoke Newington, the Speech

Room, Harrow, are among the most important. His design for the Law Courts was architecturally by far the best. The scheme which he made for decorating St. Paul's Cathedral by a veneer of marble was shown at the Royal Academy in 1873. Burges's design for Edinburgh Cathedral would grace any period of art.

E. W. Godwin.

E. W. Godwin, F.S.A., like his personal friend William Burges, imported French Gothic mannerisms, and exercised a great influence on his fellows, though considering his genius, Godwin's career individually was largely a failure. Congleton and Northampton Town Halls, Dromore Castle and Glenbigh Towers, some work at Canons Ashby for the Marquis of Northampton, are his designs. He won the first competition for the Town Hall at Leicester, and built Whistler's house at Chelsea, and others at Bedford Park. Godwin created a style of his own, and took up Japanese art with ability. As a writer of literary accomplishment and as an authority on costume and dramatic staging he was unsurpassed.

G. E. Street.

George Edmund Street, R.A., the builder of the Law Courts, was in every sense a great architect. His books on Spain and Italy's architecture of brick and marble display indefatigable industry and a discriminating incisive style. Bristol and Christ Church Cathedrals were partly rebuilt by him. His design for Edinburgh Cathedral was an excellent performance; a remark which applies to his fine churches at Kennington, Paddington, Eastbourne, Clifton, Bournemouth, and Oxford; also St. James-the-Less, Westminster, and the Convent at East Grinstead. Like Barry and Scott, Street was buried in Westminster Abbey. Bodley designed the brass over his grave.

G. G. Scott, Junr., and J. D. Sedding.

The enormous advance in church development and planning throughout the time just considered was further extended by others. George Gilbert Scott, junr., as he was called, erected St. Agnes, Newington, in 1877, and All Hallows, Southwark, some years later, realising the poetry and efficiency of ecclesiastical work of a plainer kind in brick for the purposes of town churches and advanced Anglican worship. J. D. Sedding's two London churches, Holy Trinity, Sloane Street, and that of the Holy Redeemer, Clerkenwell, are exceedingly clever and well contrived, though so different, showing a quality of mind and versatile taste, therefore somewhat disappointing.

J. F. Bentley.

J. F. Bentley's smaller churches were very charming, and the Cathedral at Westminster will hand his name down to posterity, though it is doubtful if it will ever look so grand inside as now in the undecorated plain carcase state with the brick joints to give it scale. His seminary of St. Thomas at Hammersmith, though so plain, is a greater success than his florid college near Windsor.

Some Civic Buildings.

Briefly let us turn to Civic Buildings, in which connection the Town Halls of Leeds and Hull, by Cuthbert Broderick, come to the mind for their classic merit, which also marks John Burnet's works in Glasgow, with many others of no small ability in Scotland, as at Aberdeen and Edinburgh. Greek Thomson, too, had his admirers, though his work leaves me cold. Banks and Barry's buildings, form-

ing the quadrangle in front of the Royal Academy and the Palladium buildings at its rear for London University, by Sir James Pennethorne, were erected in 1868; the City Liberal Club, by Mr. G. E. Grayson, a few years later. David Bryce erected the Bank of Scotland, and J. Dick Peddie's work will recall with praise; also E. M. Barry will not be overlooked. Alfred Waterhouse, R.A., of stupendous practice, was no sooner out of his articles than he won the Assize Courts at Manchester. The planning of Manchester Town Hall demonstrated the unequalled skill of Waterhouse as a planner, and as a water-colourist he was graphically artistic. His buildings all over the kingdom speak of him as an architect, and the Natural History Museum, if hard in material texture and not very happy in its colour, is not put out of countenance by its newer neighbours.

Domestic Work.

English and Scottish domestic work has exceeded in merit all foreign competition, and it bids fair to reach a more general application as men learn to omit senseless detail and elaboration, depending instead more on outline and good proportion; but the Gothic spirit must be retained to keep it virile and adapted to modern requirements and domestic comfort.

BOOKS.

"Should We Stop Teaching Art?"

We do not quite see the point of Mr. Ashbee's title, unless, indeed, it is intended to arouse curiosity, and thence promote purchase, as a piquant and startling title often does. For the book is really a good deal occupied with what the author seems to regard as better methods of teaching art, or at least one art, that of architecture; though it is not very easy to make out what is the real intention of his rather rambling argument. He tells us on one page that the profession of architecture "is still wedded," and rightly, "to the apprenticeship system," but in the next sentence he tells us that the apprenticeship system is worn out, and that all who have gone through it in architecture know that they cannot get from it what they need. What the young architect really suffers from, we are told, is a lack of systematised study and training. "The routine of the office does not give it him, for it is routine; the Royal Institute examinations do not give it him, for they are examinations; the Polytechnic—even the Central School of Arts and Crafts—classes do not give it, for they are classes; and finally the art school does not give it, for it is just an art school." What is the meaning of the omission of all mention of the Architectural Association School? Is Mr. Ashbee really ignorant of its existence, or is the omission intentional? If the latter, some explanation is certainly required.

We can better understand the meaning of the title of the book in regard to the second chapter, on "the province of the Royal College of Art and the problem of the art school." What is meant is that the art schools should be not schools of drawing, designing, and modelling, but artistic workshops; and there is certainly point in the figures given, that out of 459 students trained during ten years in the College of Art, only 32 have made the practice of art in any sense their livelihood, and 126 earn their living as teachers; the remainder, we presume we

are to understand, have not been heard of since in any connection with art. That is certainly rather a serious state of affairs, and seems to mean that the College of Art provides teachers of art in far greater proportion than actual artists; a result which, if it goes on in the same ratio, would lead us presently to a land full of teachers of art with no one to be taught. The natural explanation, of course, is that a man can live better on an art-teacher's salary than he can on his earnings as a producer of artistic work. There must, however, be some teaching of design and drawing before students can become real artisans in applied art. Beyond that, there is some reason in the proposal gradually to change the system of endowment of our art schools into a system for the endowment of small artistic workshops. This might lead also to larger employment in our manufactures of the work of students in such schools. We know that at present many manufacturers say that the designs made by students in the national art schools are not of any use in the market, probably because they are designs based on a theoretic system which is not sufficiently in touch with actual processes of manufacture.

In this portion of the book there is a definite and intelligible purpose. As far as architecture is concerned we do not see that there is. The only definite point that we can lay hold of is that in America architecture is recognised as a university subject, and in England it is not; and we are told that a certain superiority in American architecture—"a greater sweep, a more logical planning, a wider outlook"—is due to this university training. We were under the impression that American architecture owed more to the *Ecole des Beaux-Arts* than to any American university. And in any case this desire for university training seems rather incompatible with the tendency in other pages of the book to connect architecture more closely with an "Arts and Crafts" training.

Should we Stop Teaching Art? By C. R. Ashbee. London: B. T. Batsford; 1911. Price 3s. 6d.

Architectural Hygiene.

This book, of which a fourth edition, revised, is now before us, gathers together and digests into convenient and connected form the scattered but authentic information relating to sanitary science as it affects architects and others concerned in rendering buildings healthily habitable. The first chapter deals with sanitary legislation, and summarises, or describes the effect of, the seven Acts that bear more or less directly on the subject of sanitation. Thence the authors proceed to deal, in due sequence, with hygienic principles in relation to construction; site and foundations being first considered, then planning, and afterwards sanitary construction. General principles having been thus enunciated, the major part of the book is occupied with details of house drainage, drain ventilation, sanitary fittings, refuse and sewage disposal, ventilation, heating, water supply, and lighting. Sanitary inspection, and surveys and reports, are dealt with in successive chapters, model reports showing exactly how the observations should be recorded. The actual sanitation of a country house, and the lighting, heating, and ventilating of a city company's banqueting hall, are described and illustrated in full detail; and altogether the book will be found serviceable, not only as a text-book for examination candidates, whose requirements have evidently been kept in view

throughout, but also as a handy compendium for the architect and the sanitarian.

Architectural Hygiene; or, Sanitary Science as Applied to Buildings. Written and fully illustrated by Banister F. Fletcher, F.R.I.B.A., etc., and H. Phillips Fletcher, F.R.I.B.A., etc. Fourth Edition, revised. Pages xii+284, 7½ ins. by 5½ ins. Price 5s. net. London: Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C.

An Architect's Guide to Canterbury.

It would be interesting to know in what numerical proportion guide-books stand relatively to the general output of books. Surely guide-books must stand at the head of the list; and also it seems certain that no other class exhibits so great a variety of physical form and literary, or, alas! unliterary, treatment. They range from expensive sumptuousness to cheap squalor, their prices being a matter of pounds or a matter of pence. Yet it cannot safely be said that we have already guides enough and to spare. Those of the cheaper sort are usually thrown away immediately after they have served the purpose of the visitor, who buys another when he again visits the same spot; hence the continuousness of the supply, and hence we are disposed to welcome the projected "Tourist Cathedral Series," even though the first subject chosen is the somewhat overdone cathedral of Canterbury. The projector of the series is an architect, and his guide to Canterbury reveals many agreeable indications of that important fact. It is surprising, indeed, when one comes to think of it, that relatively so few guides are prepared by architects. In Mr. Seager's guide, the architectural point of view is always considered, without undue stress being laid upon it; and the peculiar advantage is that both laity and profession may rest comfortable in the assurance that, in describing the features of the building, the author knows quite well what he is talking about. In other respects also the guide is honourably distinguished from the general run. The arrangement is orderly and progressive, the language is terse and clear, and the illustrations, reproduced from photographs by the author, show an unusually informative—as distinguished from the purely pictorial—interest. Some valuable "links in the development" of vaulting, piers, windows and their tracery, foliated capitals, and the arch, are appended. A brief bibliography includes the following reference: "For further information on the Towers of Canterbury the reader is referred to an illustrated article by W. D. Caröe, Esq., F.R.I.B.A., published in the 'Architectural Review' of January, 1905."

The Tourist Cathedral Series. Canterbury Cathedral. By S. Hurst Seager, F.R.I.B.A. Illustrated with forty-nine photographs specially taken by the Author. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. Pages xvi + 120, 6½ ins. by 4½ ins., price 1s. 6d. net.

Artistic Stencilling.

The most vehement opponent of stencilling might well be converted to at least a less positive opinion upon it after reading the *apologia* which is so persuasively set forth in this book, and more especially after seeing the really beautiful examples which it illustrates. Those who are undecided as to whether or not they should lend countenance to this means of decoration will doubtless, in most cases, be won over to the more liberal view, more particularly since the authors are able to show that the art is no mushroom growth, but that, on the contrary, it is of very respectable antiquity. "We are strongly of opinion," they say, "that stencilling was largely used by Persian decorators in some descriptions of orna-

mentation"; and though they admit that they are unable to point to direct evidence of its employment in this connection, they contend, reasonably enough, that instances of absolute accuracy in repetition are pretty sure evidences of stencilling. Much attention is given to Japanese stencilling, "simply because it is the only school of the art from which inspiration and valuable instruction can be acquired." The materials and the process of stencilling are fully described; and, as we have said, the examples illustrated—several of them in beautifully harmonised colours or tints—will probably win over many waverers to the belief that stencilling is an unduly despised and an unjustly neglected art.

Artistic and Decorative Stencilling. A practical Manual on the Art of Stencilling on Paper, Wood, and Textile Fabrics, for Home Adornment and Articles of Dress. By George Ashdown Audsley, LL.D., Architect, and Merthold Audsley, Architect. Illustrated with twenty-seven Plates in Colour and Monochrome, and Engravings in the Text. London: George Allen and Company, Ltd., 44 and 45, Rathbone Place. Pages viii + 80 + 26 Plates, 8½ ins. by 5½ ins., price 4s. 6d. net.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Stone for Redford Barracks.

Mr. Tennant has informed Captain Gil'mour that the stone for the ashlar and rubble work for the new cavalry barracks at Redford, near Edinburgh, is obtained, as regards ashlar, from the Blackpasture Quarry, Northumberland, and as regards rubble, from Doddington Quarries, Wooler, Northumberland.

Victoria Barracks, Windsor.

Colonel Seely stated, in reply to Mr. James Mason, that the actual price paid by the Government for the freehold property acquired for the extension of the Victoria Barracks at Windsor, including costs, etc., was £40,124. The cost of erection of buildings was £54,500, besides £3,100 for improving the married quarters.

Portsmouth Town Planning Scheme.

Viscount Wolmer asked the Under Secretary of State for War whether the War Office had recently had applications made to them to sell land in the vicinity of Portsmouth for the purpose of small holdings, in order to permit the city to expand; whether these applications had been refused; and, if so, on what grounds had the Government been holding up this land?

Colonel Seely, in a printed reply, stated:—The question apparently referred to a scheme for town planning recently started by the Corporation of Portsmouth which included a considerable area of War Department land. No details of the scheme have as yet transpired, and the Corporation have been informed that until the department had further information as to what was proposed must withhold its consent to the inclusion of War Department property.

Bricklayers and Slate Work.

Mr. Carr-Gomm having asked the Secretary to the Admiralty whether his attention had been called to the fact that the stripping and re-slatting of roofs at the Royal Victualling Yard, Greenwich, Deptford, had for some years been carried out by bricklayers,

Mr. Lambert stated that bricklayers had been employed on certain small odd jobbing work, which included slating, Deptford. The work did not warrant the employment of slaters, but men in this trade would be employed for an extensive work.

NEWS ITEMS.

The New Recreation Hall, Southall.

In our description of the new Recreation Hall at Southall, illustrated in our last issue, it should have been stated that the heating, hot-water supply, and cooking apparatus were installed by Messrs. Benham and Sons, Ltd., 66, Wigmore Street, W.

A Frank Bramley Exhibition.

Mr. Frank Bramley, R.A., has been at work for the last three years in preparation for a "one-man" exhibition—the first he has ever held—and it is to take place shortly at the Leicester Galleries, Leicester Square. Since Mr. Bramley painted "The Hopeless Dawn"—now in the National Gallery of British Art—his style has considerably changed, and the fifty canvases by which he will be represented in the coming exhibition will be for the most part in his later, and perhaps more vigorous, manner.

Suggested Traffic Board for London.

At last week's meeting of the London County Council, a recommendation of the General Purposes Committee with reference to a suggested Traffic Board was discussed. The Committee recommended that the Prime Minister should be asked whether the Government proposed, as the result of representations made by the Council in 1907, to introduce legislation on the lines of the report of the Royal Commission on London Traffic to establish a Traffic Board for London. An amendment brought forward by Sir John Benn having been defeated, the recommendation was adopted.

Excavations at St. Bartholomew-the-Great, Smithfield.

The excavations which have been made at the Church of St. Bartholomew-the-Great, West Smithfield, have proved very successful, the foundations of the old chapel attached to the old Augustinian Priory which existed on the site having been discovered under what is now the Lady Chapel. The foundations, however, have not been laid bare, and it has not been necessary to make any extensive excavations, as the object in view was merely the verification of an old ground plan in which the chapel was shown, for insertion in a history of the church which is in course of preparation.

New King's College Hospital at Denmark Hill.

Although the new King's College Hospital at Denmark Hill is not expected to be finished until early in 1913, the building has now assumed proportions that convey a good idea of the undertaking. Apart from out-patients, the hospital is designed for the accommodation of over 600 patients, and there is living room for 300 nurses. The south frontage, measuring 1,200 ft., is taken up by a row of eight wards, the centre two of which are three-storey buildings, while the others are of two storeys. On this side, too, there is a large central station which will be fitted with boilers and oil engines for the domestic requirements of the hospital. All the consulting-rooms are grouped around a large waiting-hall. They are so planned that patients, after receiving attention, will not need to retrace their steps, but will find their way out past the dispensary. The bathing department is also near the waiting-hall.

On the first floor are a dental department, with a north light, and an electrical section with special rooms for Finsen light and other special forms of treatment. The observation ward is planned on the cellular principle, after the model of the Pasteur Institute in Paris, but with improvements in detail. It consists of eight single-bed wards, separated from the corridor by glazed screens. The isolation block is in the north-west corner, and the surgical arrangements include several modern operating theatres and a number of laboratories. The architect is Mr. W. A. Pite, F.R.I.B.A.

Russian Architecture.

So little attention has been paid in this country to the architecture of Russia, that a comprehensive survey of the subject should contain a great deal of fresh interest. We have received an illustrated prospectus (in Russian) of a volume in which the "Architecture of the Eighteenth and Nineteenth Centuries in Russia" (1700-1840) will be described and illustrated, the 400 pictures including many hitherto unpublished designs by eminent Russian and foreign architects. Apparently the volume is being prepared under the authority of the "Society of Russian Architect-Artists." The illustrations shown in the prospectus give promise of a work of exceptional interest.

Business Change.

It is announced that for family reasons the business carried on for the last 60 years in the successive names of A. E. Burrell, A. E. Burrell and Son, and for the past 37 years as Burrell and Co., has been converted into a private limited liability company, the first directors being: Edmund Risolière Burrell (chairman), Percy Edmund Burrell, and Keith Burrell; all of whom will sign as joint managing directors. The new company takes over the late firm's liabilities. The company has been so constituted that the whole of the issued capital remains in the hands of the family, thus providing for a continuity of control. The address of Messrs. Burrell and Co., Ltd., manufacturers of varnishes, colours, enamels, etc., is Tower House, Trinity Square, London, E.C., with works at Burrell's Wharf, Millwall, E.

Sheffield University Department of Architecture.

Soon after the formation of the Department of Architecture at Sheffield University, it was considered advisable to organise vacation courses at places in which buildings of architectural importance could be studied by means of the making of sketches and measured drawings, and to make attendance at a certain number of these courses compulsory for students working for the diploma in architecture awarded by the university. The vacation course for Easter generally begins about the end of March, and lasts from a week to ten days, while the summer course begins about July 8th, and lasts from three weeks to a month. Permission to sketch and measure a series of important buildings is obtained, all difficulties as to the use and hire of ladders, etc., are avoided, and an instructor is present with the students to give such advice and guidance as may be needed. The Easter course will be held in Bath this year, beginning on March 23rd. Permission to sketch or measure at several important buildings, including the Abbey, Prior Park, Ralph Allen's

town house, the banqueting-room of the Guildhall, and No. 24, Queen Square, has already been obtained. A visit will be paid to one of the quarries belonging to the Bath Stone Firms, and at the beginning of the course a lecture on the architecture of Bath will be given by Mr. Mowbray A. Green, F.R.I.B.A., vice-president of the Bristol Society of Architects. For the summer course, a sketching and measuring tour in Northamptonshire will probably be arranged. The lecturer in the Architectural Department of the University is Mr. W. S. Purchon, A.R.I.B.A.

ACQUISITION OF STEVENS
COLLECTIONS

The Victoria and Albert Museum has recently acquired a considerable number of drawings and designs by Alfred Stevens from the collections made by two of his pupils, James Gamble and Reuben Townroe, both of whom died in the early part of 1911. These have now been mounted and labelled; and a selection has been placed on exhibition in Room 75, advantage being taken of the opportunity to rearrange the drawings by Stevens already shown there, which are now grouped according to subject throughout the gallery. Designs for the decoration of St. Paul's Cathedral form one of the most important sections of the exhibition, the various studies in red or black chalk or pencil being illustrated by tracings made by Townroe and Stannus of the completed designs. The designs and studies for the decoration of Deysbrook have also been brought together, and are now supplemented with several full-size working drawings of details in colour, which have not before been exhibited. One of the most interesting of the new acquisitions in this class of work is a sketch in water-colour for the decoration of a staircase and landing of a public building. The Museum has acquired several early studies, both of landscapes and from works by old masters, made by Stevens during his first visit to Italy, among them being small copies in water-colour of Titian's "Flora" and "Eleanore Gonzaga."

The collection also includes studies in black chalk for the decorations of Dorchester House, and designs for silver-smiths' work, candlesticks, street-lamps, pottery, and stoves, as well as a large number of slight sketches of architecture and furniture and memoranda of subjects for figure compositions. The Museum now possesses upwards of 500 drawings and studies by this distinguished British artist; those not exhibited in Room 75 (or Room 48, where a series related to the Wellington Monument has been hung) being obtainable on application in the Students' Room (71) of the Department of Engraving, Illustration, and Design.

This department has also recently acquired a valuable series of original drawings by Randolph Caldecott, made as illustrations to "Breton Folk" (1880); and a volume of fanciful pen-drawings by Richard Doyle, entitled "A Book Full of Nonsense. By Dick Kitcat." dated 1842, but not published. Both these valuable accessions are due to the generosity of Sir Edwin Durning-Lawrence, Bart. They are exhibited in Room 70, where are also placed fifteen original studies by the late Sir Francis Seymour Haden, P.R.E., of which eight were presented by F. Seymour Haden, Esq.

MANCHESTER BUILDING TRADES
EXHIBITION.*Messrs. D. Anderson and Sons.*

The specialities D. Anderson and Sons, Ltd., are exhibiting at the Building Trades Exhibition in Manchester, which is being held from March 5th to 16th, include their "Rok" roofing, which they have recently put on the market, after severe and exhaustive trials in India, and other countries where the conditions are far more severe than in England, and where it has come out triumphantly. In South Africa, the South African Union officials have passed it as meeting all their requirements of a roofing felt, and have given permission for its use on contracts to be executed for them. At home it has recently been used for roofing buildings for the Great Southern and Western Railway of Ireland, at Limerick; by Messrs. John Henry and Co., paper-makers, Thatcham, Berks; Messrs. Hutchinson, Hollingworth and Co., Dobra Loom Works, Dobra, Yorks; Siemens Bros., Ltd., Dynamo Works, Stafford; Whitehead Iron and Steel Co., Tredegar, Mon., and many others.

Messrs. Anderson and Sons are also showing their Stoniflex felt, which is now well known by architects and builders as a capital felt for roofing buildings, and also for sarking and lining.

Another new article they are showing is their "Zerolite" insulating paper for insulating cold stores and for lining purposes.

They are also drawing the attention of architects and others to the bitumen sheeting, made from pure Trinidad bitumen, which they are supplying for reservoirs, tanks, etc., and their pure bitumen dampcourse for walls.

Rolls of their bituminous hair felt, which, they state, is coming greatly into favour with architects for sound-deadening and sarking purposes, are on show. The article is vermin-proof.

Fencing treated with Messrs. Anderson's Sideroleum wood preservative is shown, and this also is an article that is now well known, being used throughout the country for this purpose, and also for half-timber work, sheds, etc.; for, besides being a preservative, it gives an extremely pleasing appearance, resulting from the beautiful nut-brown shade in which it is made.

The firm also show a range of galvanised sheets coated with "Siderosthen" anti-corrosive paints in various shades, which they commend to architects' attention as paint for galvanised iron.

Messrs. Vulcanite, Ltd.

Messrs. Vulcanite, Ltd., of Westinghouse Road, Trafford Park, Manchester, also at Belfast, London, Newcastle-on-Tyne, Glasgow, and Dublin, occupy Stand 56, which architects, surveyors, engineers, and contractors will find to be one of the most interesting in the exhibition. The exhibits include a model brick building with a flat roof tastefully laid out as a miniature roof garden, the roof being constructed of joists and 1-in. tongued-and-grooved boards covered with patent Vulcanite roofing.

Messrs. Vulcanite, Ltd., who are the sole patentees of this roofing, have covered roofs measuring in the aggregate upwards of 4,000,000 superficial yards, including some of the finest hotels, villas, works, and public buildings in the United Kingdom, the Colonies, America, and other countries, and they claim that their patent Vulcanite roofing is a perfect covering for

flat roofs of wood or concrete construction, inasmuch as it is absolutely waterproof and fire proof, and is not affected by expansion and contraction, vibration or settlement of the building.

The exhibit also includes a water tank, which is formed of 9-in. brick walls, the bottom and sides being lined with Vulcanite and afterwards bricked in with white glazed bricks. In order clearly to demonstrate the waterproof qualities of the Vulcanite, ordinary mortar only has been used, and an opening has been left in the glazed brick lining, leaving a portion of the Vulcanite exposed. This part of the exhibit will particularly interest municipal authorities, architects, surveyors, and engineers who are constructing swimming baths, reservoirs, etc.

Another interesting feature of the exhibit is "Bituna" pure bitumen dampcourse. This material, which is being specified by the leading architects for foundations, subways, arches, etc., is guaranteed to be made of pure Trinidad bitumen, with no admixture of coal-tar or coal-tar pitch. A section of a brick wall is shown standing in water with a course of "Bituna" about 6 in. above the water level. Underneath the dampcourse the bricks are soaking wet, whilst they are perfectly dry above, thus proving the efficacy of the "Bituna."

The firm are also exhibiting Vulcanite asphalte, and Rexilite dampcourses for foundations, etc., Leatherite, Vulcanite asphalte and Rexilite roofings for sloping and circular roofs, Vulcanite bitumen and Vulcanite waterproof sheetings for underlining slates, tiles, etc., and a model building covered with Rexilite. When viewing the latter, visitors will be struck with the neat and attractive appearance of the Rexilite, which is suitable for covering motor garages, billiard-halls, picture theatres, cricket and football pavilions, or any other building on which it is essential to have a perfectly watertight roof.

TRADE AND CRAFT.

The Lighting of Country Houses.

Probably many wealthy people, fearing the drawbacks of antiquated lighting and heating arrangements, hesitate to occupy country houses. Many people are unaware of the enormous strides which have been made in the last few years in electric generating sets, which have been brought to a surprising degree of simplicity and excellence in working. Messrs. Tredegar and Co., of 56, Victoria Street, Westminster, whose systems are in use in many of the most famous residences in the country, have a particularly effective plant, which can be installed in the oldest houses with perfect safety, and will provide light and heat for the house and power to work laundry, stable, and other domestic machinery. Their surface wiring system does away with the great damage to the walls which formerly was inevitable, and their artistic wooden fittings harmonise with any period of architecture. For those who prefer gas illuminant, they have equally effective acetylene and petrol air gas sets, which are also inexpensive to install. The working of any of these systems is simple in the extreme; and as this firm sends a competent engineer to instruct the gardener or coachman in the management of the engine, there is no fear of a breakdown through lack of proper knowledge and attention.

OBITUARY.

Mr. George Attwood.

Mr. George Attwood, who died on February 9th, at Steyning Manor, Stogursey, Somerset, was a member of the Institution of Civil Engineers and various other scientific and professional bodies. He began his professional career at the age of 16 under his father and Mr. W. W. Palmer, C.E., in California and Nevada. He constructed and designed large engineering works on the American Continent and in Africa, and practised as a consulting civil and mining engineer in London. He was the author of numerous scientific publications and papers.

Mr. G. E. Pritchett.

The death took place on February 23rd of Mr. George Edward Pritchett, F.S.A., of Oak Hall, Bishop's Stortford, in his 88th year. Mr. Pritchett was the oldest Old Carthusian, and was present at the recent Tercentenary Banquet. He was the architect of many churches in Herts and Essex.

Sir John G. N. Alleyne.

Sir John Gwyn Newton Alleyne, Bt., whose death recently occurred at Falmouth, was born in the year 1820, and succeeded his father in the baronetcy, created in 1769, in the year 1870. An engineer by profession, Sir John was an original member of the Iron and Steel Institute, and was, indeed, the sole survivor of the first council formed under the presidency of the seventh Duke of Devonshire, in 1869. He was a Vice-President of the Institute during recent years. Sir John was also a member of the Institution of Civil Engineers and the Institution of Mechanical Engineers. He was associated with many important railway contracts, including the building of the St. Pancras Station of the Midland Railway. Sir John was also responsible for the design of a considerable amount of colliery plant. He took much interest in certain branches of iron and steel research, notably the application of the spectroscopic to analysis; a subject upon which he contributed a paper to the Iron and Steel Institute.

Dr. Osborne Reynolds.

Dr. Osborne Reynolds, formerly Professor of Engineering at Manchester University, died recently at Watchet, Somerset. Born in Belfast in 1842, Dr. Reynolds was educated at Dedham Grammar School, afterwards proceeding to Queens' College, Cambridge, and graduated as seventh Wrangler in 1867. For nearly 40 years he occupied the Chair of Engineering at the Owens College. In 1877 he became a Fellow of the Royal Society, and in 1883-4 he served as member of the Council. In 1887 he became a sectional president of the British Association, and in the following year received a gold medal of the Royal Society. He wrote more than 70 papers on mechanics and physics, among which "The Laws of Resistance in Parallel Channels," "Theory of Lubrication," and "Flow of Gases" are familiar to all engineers. His work "Sub-Mechanics of the Universe," a volume printed and circulated by the Royal Society, is one of the most remarkable scientific works of the 19th century. Dr. Reynolds organised and arranged the Whitworth laboratories of the Owens College, Manchester, and made them not only famous throughout the world but a pattern for the other European schools of research.

THE ARCHITECTS' & BUILDERS' JOURNAL

WEDNESDAY,
MARCH 13th, 1912.

Volume XXXV.

No. 895.



CHIMNEYPiece IN DINING-ROOM, "DEYSBROOK," NEAR LIVERPOOL.

"Deysbrook," near Liverpool, an old house now used as a children's hospital, has been made notable by the painted decoration which Alfred Stevens carried out there. It also possesses this chimneypiece in what was formerly the dining-room, but is now the babies' ward. This is carried out in wood and is a vigorous piece of work, though tainted with mid-nineteenth-century feeling; "Deysbrook" having been built in the 'forties for the Blundell family.

DESIGN FOR A GUILDHALL.
DETAILS.

SCALE OF FEET.

SECTION THRO' PORTICO.

VISTA

SECTION THRO' END FLAYRE.

SOANE MEDALLION COMPETITION : DESIGN BY BERTRAM LISLE ("VISTA").

THE ARCHITECTS' & BUILDERS' JOURNAL.

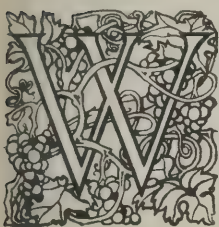
MARCH 13th 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 875.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Gwilt and His "Encyclopædia of Architecture."



WHILE so many books have been published of late years to give instruction in various branches of architecture, including dictionaries such as that brought out by the late Mr. Russell Sturgis, it seems desirable to recall to the recollection of architects and students one monumental work which in its way may be

said to stand alone among works in the English language, namely, Gwilt's "Encyclopædia of Architecture," first published in 1842, and followed by new editions in 1876 and 1888, enlarged and revised by the late Mr. Wyatt Papworth, and by him brought up to the date of the latter period with respect to the class of subjects about which experience and knowledge go on accumulating. A large proportion of Gwilt's Encyclopædia, however, deals with subjects—such as geometry, perspective drawing, mechanics and statics, etc.—that are not progressive, and even in regard to subjects on which we have added experience the amount of useful knowledge summed up in this book is more than could be found in any other single publication. We imagine that the latest edition is out of print now; at all events we never hear it referred to. Yet this is a book quite beyond the scope of what is generally called a "dictionary" of architecture. The object of a dictionary is to give more or less condensed information on everything connected with architecture, including explanations of terms, short biographical notices of eminent architects, etc.; but such articles in a dictionary are in general necessarily short, and often serve not so much to give full information as to indicate where to look further. Gwilt aimed at something far more solid than this; he endeavoured, to use his own words, "to compress within the limits of one closely printed volume all the elementary knowledge indispensable to the student and amateur." He went, in fact, far beyond the limits of what any "amateur" in architecture would ever trouble his head about, and he was quite justified in the modest conclusion which he goes on to express—"he even ventures to indulge the belief that it will be found to contain information which the experienced professor may have overlooked." And certainly any architect of the present day who possessed in his own head all the knowledge that is summed up in Gwilt's bulky volume would be a rather exceptional person.

Joseph Gwilt, who was born in 1784, was the son of an architect, George Gwilt, who seems to have had a good position in his day; he was Surveyor to the County of Surrey, and built the warehouses at the West India Docks. The son, the author of the "Encyclopædia," was a man of somewhat remarkable and varied attainments. Not only did he possess a great deal of practical knowledge of architecture and building, he was a member of the Royal Astronomical Society, and was an accomplished musical amateur; he held concerts in his own house for the performance of classical chamber music, was commissioned to write the article "Music" for the "Encyclopædia Metropolitana," and at the Coronation of Queen Victoria was entrusted with the conducting of the choir. When a short biographical paper on him was read at the Institute of Architects shortly after his death, a member who was present stated that in

addition to the acquirements mentioned in the paper, he had first known Gwilt, fifty years before, as the author of a grammar of the Anglo-Saxon language. Gwilt does not appear to have carried out any buildings of importance; but he was architect to the Grocers' Company, and remodelled the interior of their hall, besides carrying out some additional buildings for them. He was a great traveller, and is said to have been a diligent sketcher when abroad. He was a Fellow of the Society of Antiquaries, to which he was elected in 1815. He died at his house at Henley-on-Thames in 1863.

As far as the existing evidence goes, Gwilt's interesting architecture seems to have been mainly in regard to its practical side, as building construction. His first publication, indeed, in 1818, consisted of notes on remarkable buildings in Italy, under the title "Notitia Architectonica Italiana," which is more on the architectural side of the subject. His next publication was one on "The Equilibrium of Arches demonstrated on mathematical principles," and he also published a treatise on "Sciography"; in later life, however, neither of these seems to have satisfied him, as he mentions in the preface of the "Encyclopædia" that in regard to the former subject he had adopted for this work the principles as expounded by Rondelet, considering them better than his own, and that in the "Encyclopædia" he had not made use of his own treatise on sciography, but had treated the subject afresh, "trusting that matured experience had enabled him to treat the subject in a form more likely to be extensively useful than that of treading in his former steps." "The Rudiments of Architecture," published in 1839, might be more correctly called perhaps "rudiments of construction," except for the fact that plates of the Orders are appended to it; otherwise it is a treatise on the principal problems of construction, a kind of Vitruvius on a small scale, the subjects being treated in a very concise manner.

In 1837, however, Gwilt published a short treatise of another kind, his only work which can be called purely æsthetic, on "Elements of Architectural Criticism," dedicated to Cockerell. It is to a great extent polemical, having evidently originated in a desire to reply to and confute certain published criticisms on architecture which he regarded as unsound and deficient in true knowledge of the subject. The writings which he was criticising are of no consequence now—they have passed into the limbo of forgetfulness; but some of the opinions in Gwilt's essay are of interest, considering the date at which it was written. He alludes to the high position taken by the French in architecture—the highest in Europe, in his opinion; and attributes this to the justice and impartiality with which their competitions are conducted; the habits of the people, which allow of many families living in one large building (no idea of houses in flats had yet dawned on London); and the thorough and severe course of studies prescribed; in France there was no chance for half-taught architects to get on by good luck or favouritism. In another place he goes into some criticisms on the conditions of architectural design in England:—

"The Orders have been the principal basis for the manipulations (as they may be called) of architectural composition. And as readiness in applying them seems to have been always one of the chief objects at which young architects have aimed—so much so that they scarcely seem to consider a design

worthy the epithet architectural without the display of a portico, or at least some half-dozen columns attached to a wall, to which they are generally more an incumbrance than an ornament—the facility of their application has often superseded all consideration of propriety. This, in some measure, has arisen from placing more reliance on pictorial effect than propriety."

This seems a very modern kind of criticism to have been written in 1837. Then he attacks what he regards as the unthinking idolatry of Greek architecture: "Had Rome really nothing to boast of? Are the extraordinary Gothic edifices of the Continent, and no less of this country, unprofitable specimens of design and execution?" A question which was to receive a very large answer before many more years after it was put. Of the contemporary German Classic work, at Munich and elsewhere, he had the poorest opinion: "The German school is neither Italian nor Greek, but a bad compound of both"; a rather harsh and hardly fair judgment on Schinkel and Klenze.

How much of his great book, which in its latest form consists of 1,393 small-print pages, and was not so very much smaller in its first edition, was his own personal work, one cannot very well say; but probably most of it was written by himself; though in some portions, as he admits in the case of the treatise on the structure and equilibrium of arches, he based it on the ideas of writers of acknowledged authority. A sentence in the preface gives his own view of the position:—

"Though, in form, the whole work pretends to originality, this pretension is not advanced for the whole of its substance. Not merely all that has long been known, but even the progressive discoveries and improvements of modern times, are usually founded on facts which themselves have little claim to novelty. As a fine art, architecture, though in its applications and changes inexhaustible, is in respect of first principles confined within certain limits; but the analysis of those principles and their relation to certain types have afforded some views of the subject which, it is believed, will be new even to those who have passed their lives in the study of the art."

At all events Gwilt marshalled his vast materials in the most masterly manner; and it is evident that where he sought for outside help he took care that it should be of the best. There could not be a better illustration of this than in the series of small outline drawings of the human figure in various moments of action, which are introduced as illustrations in the section on "Drawing." It is not likely that Gwilt drew these himself; but whoever did them was a master of figure-drawing. The same spirit of completeness and excellence runs through the whole book. Except in regard to subjects on which the information of his period is necessarily out of date now, we do not believe there is a book of information on architecture more absolutely reliable than Gwilt, or more full in its information on the science of construction. With the exception just mentioned, of the out-of-date subjects, one never looks into Gwilt in vain; whatever one has a right to expect from a publication of that date is sure to be there.

The "Encyclopædia" commences with a very well-written history of architecture, filling more than 260 crowded pages of small print, and though the small woodcut illustrations would be thought unsatisfactory now, they are very well selected. Probably, from references to works more recent than the original edition, this history was to some extent amplified by the later editor, Wyatt Papworth, also a very careful and conscientious writer as to facts. Some of the views expressed, especially as to the development of early Gothic and its relation to preceding styles, would not be accepted now; but as a whole the History is a wonderfully good summary for the time at which it was written. After this we come on the real business of the book, "The Theory of Architecture," forming Book II., and commencing with Geometry, Plane Trigonometry, Conic Sections, and "Descriptive Geometry," using the term to express "that part of geometry which consists in the application of geometrical rules to the representation

of the figures and the various relations of the forms of bodies," which includes, of course, projection and the principles which underlie stereotomy, though the latter subject is much more fully developed under the head of "Masonry Construction." Mechanics and Statics occupy a long section, followed by the application of all these subjects in the structure and equilibrium of piers and vaults. All these practical sections are not mere outlines; the subjects are gone into very fully, illustrated with numbers of diagrams. "Walls and piers" and "beams and pillars" follow. There follow after these long treatises on materials. Perspective is very fully and completely treated. Then we come to what every instruction book of the period had to include (and should still include), a complete analysis and illustration of the Orders, prefaced by a short chapter on "Beauty in Architecture," which includes some really good and weighty considerations, as worth attention now as the day they were written. We will quote the list of maxims by which the student is advised to test the quality of his design:—

"1.—Let that which is the stronger part always bear the weaker.

"2.—Let solidity be always real, not brought to appear so by artifice.

"3.—Let nothing be introduced into a composition whose presence is not justified by necessity.

"4.—Let unity and variety be so used as not to destroy each other.

"5.—Let nothing be introduced that is not subordinate to the whole.

"6.—Let symmetry and regularity so reign as to combine with order and solidity.

"7.—Let the proportions be of the simplest sort.

"8.—Let him recollect that nothing is beautiful that has not some good and useful end."

Nos. 4 and 6 are perhaps rather vague; but the rest of the maxims are surely admirable.

The "Principles of Proportion" forms a very long section, a book in itself, and the theories as to the rules of proportion possibly applied in Classic buildings are, to our thinking, of rather doubtful utility; the author is not (any more than any one else) able to make the diagrams of proportion exactly fit the facts; but he does not insist on them too dogmatically, and there is a great deal in the treatise which is at all events suggestive, and leads the reader to think about the reasons of things.

To the book is added a list of architects from the earliest times down to the nineteenth century, with brief notices of their works, and a glossary of terms used in architecture and building; this is of great length and very fully carried out, and forms the conclusion of the work.

In a word, Gwilt's "Encyclopædia" is a monumental book, one of the most remarkable publications in connection with architecture in the English language, and ought not to be forgotten. It would be well worth while to produce, under competent hands, another new edition, bringing up again to date those portions of the book which require it, and adding what is necessary in respect of methods of construction which have come into use since the last edition.

It might be better in that case to divide it into two volumes, as it is already rather inconveniently bulky. But it is too remarkable a book to be allowed to die out and be forgotten.

The Proposed Lambeth Bridge.

IT is satisfactory, so far, to find that on Thursday last the House of Commons rejected the second reading of the Lambeth Bridge Bill by 180 to 115. Mr. Essex, who moved the rejection of the Bill, did so in order to elicit further information as to the bridge, which would be within view from the Terrace of the House, and he did not think that for £240,000 they could get a bridge worthy of the site. The fact that the bridge would be seen from the Terrace is not the most important point, though no doubt proximity to the seat of legislature is an additional reason

for consulting architectural dignity in a public structure ; but in the opinion that nothing worthy of the occasion could be done for £240,000, he was absolutely correct. Mr. Crooks, who seconded the rejection, deprecated the mistake of "belittling London," and one may be glad to observe that a feeling in favour of architectural dignity as against false economy is gradually beginning to pervade the House of Commons ; we have waited long enough for it. The fact seems to be that because the existing Lambeth Bridge was built only as a kind of extra bridge, of no great importance at the time, therefore the new bridge can be treated in the same way, as an unimportant and comparatively small bridge. This is a double mistake. In the first place, it is desirable that all the bridges over that part of the Thames which flows through London should be of architectural dignity and of a monumental character ; that they should carry the architecture of the city across the river. But in regard to the Lambeth Bridge there is the point to be considered, which the London County Council do not seem in the least to realise, that the Lambeth Bridge, if of adequate scale and structure, would furnish the shortest route from Victoria to the East End docks, more especially if the street plan on the Middlesex side were improved and a broad avenue opened from Victoria Station to the new bridge. That would be one of the greatest public improvements in south-west London ; it is likely to be carried out sooner or later, and the Lambeth Bridge ought to be ready for it, and to be planned accordingly. We were rather disappointed with the speech of Mr. John Burns on the occasion ; he urged, indeed, that a wider bridge than that proposed would probably be needed, but he said nothing as to the desirability of a fine bridge from the architectural point of view. Mr. Burns has so often given evidence of his sympathy with schemes for increasing the architectural beauty and dignity of London, that one must regret that in discussing the Lambeth Bridge Bill he did not take the opportunity of pressing this consideration on Parliament, but contented himself with a merely utilitarian speech.

The Institute Meeting-Room.

A SUGGESTION which was made by Mr. Munby, in the *Institute Journal*, for rearranging the seats in the room in which the Institute meetings are held, was put on trial at the last meeting. It is unfortunate that the meeting-room is too long and narrow to fulfil the best conditions of a meeting-room ; that was unavoidable—the room was there, and had to be taken as it was. There has been some complaint that speakers at the farther end of the room could not hear those in front well. The alteration has been to move the President's desk to the centre of one of the long sides, and arrange the room with the benches in the centre portion parallel with the longer wall, and those towards each end put slanting across the room, so that those at each end face towards the presidential chair. For the general discussions at a business meeting this is an improvement ; for meetings for the reading of papers we do not think it is ; the reader of the paper cannot act the part of Mr. Facing-both-Ways in the "Pilgrim's Progress," and can only face and speak towards a portion of his audience. It is much better, in the reading of a paper, that all the audience should face the reader, and there is no difficulty in those at the farther end of the room hearing, if a lecturer reads clearly and not too fast. And for lectures illustrated by a lantern the side position of the screen would be fatal ; the lantern could not be got far enough off to set the most effective focus, and only half the audience could see the illustrations properly even then. For lantern illustrations it is absolutely necessary to have the screen at the end of the room and the audience facing it. The next paper, by Mr. Ward, on the Architecture of the French Renaissance, will probably be accompanied by many interesting illustrations, and for that we hope the old arrangement of the room will be returned to. The best decision will be, in fact, to retain the

old arrangement for all reading of papers, and to adopt the side position of the chair only for business evenings when there is a general discussion and no formal paper is read.

The Front of the Institute Premises.

IT is a great pity that the front of the house in Conduit Street, which is in itself a perfectly harmless façade of the old conventional type, and is not at all in bad taste, should continue to be defaced by the ugly and commonplace cast-iron railings in front of it. All the metal details inside the building have been re-designed in excellent taste ; only on the outside, where every one can see it, this piece of bad Victorian ornamental railing has been retained, representing the worst form of inartistic metal-work. The Institute really ought, for its own credit, to commission Mr. Hare, who was architect for the alterations,¹ to make a good if simple design for a new front railing. The alteration would make all the difference in the general character of the front of the Institute house.

The Art of the Etcher.

THE special type of artistic expression which can be attained by the use of the etching-needle could hardly receive better exposition than in the present (the thirtieth) exhibition of the Society of Painter-Etchers, opened this week at the rooms of the Society of Water-colours. It is one of the best exhibitions they have ever had, full of beautiful work all round the walls ; and we are glad to see that there is an increasing tendency to depend on the genuine character of etching, that of work in free line, and less and less on those rather *ad captandum* effects in aquatint of which we used to see so many. Sir F. Short, our greatest master of true etching in line, has indeed deserted his colours this year, for the employment of aquatint, in which he has produced some charming effects ; unfortunately he only exhibits three works. We hope he will return to the art of which he is such a master ; the art of showing how much can be conveyed in a few lines.

Among the large number of the exhibitors who keep to line work there may be said to be two divisions : those who draw with a careful use of line shading which might be imitated by the pen, and those who rejoice in the freedom of the etched line without attempting to define things too precisely. The first style is the prose, the second the poetry, of etching ; though there is some excellent and interesting work in the prose style. There are those, again, who carry freedom of line too far, and give us work covered with a scrawly, untidy mass of lines which have no definite meaning. It is of the essence of etching to get an effect with few lines and much untouched surface ; the important point is to know when to leave off. Mr. Bernard Eyre's etchings are good examples of this class of work, and Mr. Gaskell's "The Mouth of the Wye," Mr. Charlton's "The Winding Road," and many others that might be mentioned. It may be thought an easy art to leave the whole mass of water in a river scene as untouched paper, and let one boat make a dark spot in the middle of it ; but it is a treatment which speaks the character of etching ; and the point is, to know just where to put your boat. On the other hand, Mr. Haig's "Neidpath Castle" is what we should call engraving, not etching.

There are a great many architectural subjects. M. Simon has managed to get a powerful effect out of the interior of Notre Dame with the light coming through the rose window ; an effect only to be obtained by a very careful and laborious working up of the darkened interior ; but there is nothing stiff or mechanical about it. Miss Hughes has not been quite successful with "The Old Houses of Parliament, Dublin," because Classic architecture will not bear too much line shading ; it loses its precise and finished look, and requires a different kind of treatment. Mr. Schröder contributes an etching of "The Old Dee Bridge, Chester," the one the picturesque quality of which was mentioned

in the discussion on Mr. Waterhouse's recent paper on bridges. Mr. W. Monk may be congratulated on a fine and powerful etching, on a rather large scale, of Carnarvon Castle. There are many other examples of the treatment of architectural subjects in etching, which should be of interest to architects.

A collection of the etchings of the late Professor Legros, of whose art we have spoken recently, forms a special feature in the exhibition, and illustrates his powerful though rather sombre genius.

Méryon's Etchings of Paris.

THE foregoing consideration of etching leads us to notice the excellent reproductions of eight etchings of Paris by Charles Méryon which form a prominent feature in the March issue of "The Architectural Review." Méryon was the greatest of all French etchers, and the plates which he produced during his short tragic life are the finest work of their kind since Rembrandt laid down his needle. To quote the writer of the matter accompanying the reproductions in question: "For Méryon art was not a flower-bordered path, but one overgrown with the wild tangled weeds of melancholy and madness—he died in 1868 in the madhouse at Charenton. What wonder, then, if his etchings should tell of this! Certainly stone walls never took on a more terrible physiognomy than under his touch. There is perhaps nothing more poignant in art than some of his etchings; despair seems to lurk in the streets, and madness peeps forth from the windows. R. L. Stevenson said of Paris, 'Certain old houses demand to be haunted.' Surely no one was fitter to portray this aspect than Méryon. His etchings were made merely to supply views of a Paris which was rapidly disappearing, and although he saw it all with eyes behind which an indefinable sorrow was hidden, yet his portrayal was accurate. No artist, indeed, was ever gifted with a more accurate needle to delineate architecture. His line is a marvel of strength and decision, often emphasised by the severity adopted in the treatment of his subject, yet is never lost sight of in his more intricate compositions. 'L'Abside de Notre Dame' is perhaps his greatest etching, 'by right of its peculiarly majestic composition and of its solemn and austere beauty.' . . . Seymour Haden, writing of 'L'Abside' and 'La Morgue,' says: 'From both of these it may be inferred that his work was not impulsive and spontaneous, like etched work in general, but reflective and constructive, slow and laborious.' . . . His method was this—he made, not a sketch, but a number of sketches, two or three inches square, of parts of his picture, which he then put together and arranged into an harmonious whole, which whole he first bit in (with the acid) and then worked into completeness with the dry-point. What is singular, and a proof of his concentrativeness, is that the result has none of the artificial character usual to this kind of treatment, but that it is always broad and simple, and that the poetic motive is never lost sight of. There is a trial-proof of "Le Stryge" in the British Museum which throws an interesting side-light on his methods. Where it is etched the plate is practically carried to completion, but the chief features of the composition—"Le Stryge" and the Tour St. Jacques—are not even suggested; the paper is blank where they are to come.' . . . Méryon's whole output amounted to about 100 plates, many of which are chiefly interesting as being by his hand, but the Paris set makes his sufficient monument. These were something new, a new aspect of architecture which the world had never seen before."

Other articles in the March issue of the "Review" include—Chambers and Myers at Trinity College, Dublin, by Mr. Harry Sirr, F.R.I.B.A.; William of Wykeham as a Castle Builder (with a newly discovered plan of Queenborough Castle), by Mr. Alfred W. Clapham; An Unpublished Sketch by Elmes of St. George's Hall, Liverpool, by Mr. C. Harrison Townsend, F.R.I.B.A.; Some Suggestions with regard to London Traffic, by Mr. W. L. Lucas; and Book-plates, by Mr. G. S. Powell. The "Practical Exemplar" is devoted to the Hôtel des Sociétés Savantes at Rouen, while "Current Architecture" is

represented by a large number of special photographs of Whiteley's new premises, the architects of which are Messrs. John Belcher, R.A., and J. J. Joass, F.R.I.B.A.

Pompeian Ornament.

THERE is a great deal of charm in the painted ornaments on the walls of the unearthed houses of Pompeii, with the general character of which we are all more or less familiar; but attention is called to them afresh by the issue of an attractive volume of coloured prints, accompanied by a short essay in which the varieties of style are briefly analysed.* The special value of this publication is that, by the use of the three-colour process of printing in colours, it has been possible for the first time to give what are claimed to be facsimile reproductions of the actual effect of the decorations. Owen Jones included some coloured plates of Pompeian work in his "Grammar of Ornament," but these were probably rather an approach to the original effects than a reproduction of them.

It must always be remembered that Pompeii was a place to some extent of Greek traditions in art, having commenced its existence as a Greek colony, and having still in it the remains of a sixth-century Greek Doric temple; and though the place only became important at a later date, and under Roman rule, one may imagine that its Greek origin left its mark on the taste of the city. Some of the details figured are Roman enough, but the style of decoration with which we are most familiar as Pompeian has a character of its own, not quite similar to anything else that is known in antique work.

Mr. Briggs, the author of the work, adopts Mau's classification of Pompeian decoration into four styles, succeeding each other chronologically, and distinguished as "The Incrustation Style," "The Architectural Style," "The Ornate Style," and "The Intricate Style." The nomenclature is rather clumsy, but it will serve. What is called the "Incrustation" style really means the use of mosaic as a decorative surface, the first illustration being that of a column which was covered with mosaic decoration, parts of which are given in colour in detail. The whole effect must have been very rich originally, though some of the ornament is too naturalistic for mosaic. Two wall fountains between columns show a very elaborate decoration with mosaic, partly in coloured panels, partly in naturalistic ornament. A stucco ceiling to the Stabian Baths introduces us to quite a different style of decoration, based on intersecting circles defined by different coloured bands. This would not be the least recognised as Pompeian, according to the popular knowledge of Pompeian decoration; it looks in fact remarkably modern. It is when we come to the "Ornate" style that we recognise what we generally know as Pompeian ornament; friezes formed of thin light festoons depending from painted horizontal stems (they are too thin to be called poles); birds, sprigs of flowers, and sometimes artificial objects, being introduced to fill in the scheme. These are painted in fresco on a plaster surface. They form an exceedingly pretty kind of ball-room or boudoir decoration, but not what can be called a very high type of art; it is work that can be lightly conceived and lightly executed, with a great deal of rather superficial grace. What is called the "Intricate" style is less spontaneous, and more crowded with detail—variously coloured panels, some with figures or groups painted in them. Some of those that are given are rather overloaded with detail, and do not show the easy and spontaneous grace of the preceding style. The best things that are familiar to us as Pompeian decoration, the panels with one little dancing figure, often of exquisite grace, painted in the middle of the panel, do not appear among the illustrations.

The Greek spirit which existed at Pompeii is most shown in some of the uncoloured illustrations of work of a more architectural kind, especially the white marble table support which appears in the third plate, consisting of two winged griffins back to back, the space between them filled

*Pompeian Decorations. By R. A. Briggs, Architect; Soane Medallist and Fellow of the Royal Institute of British Architects. London: E. & Batsford. 25s.

in with carefully designed scroll-work which is quite Greek in feeling. This is still *in situ* in the Impluvium of one of the houses; it has, we think, been often illustrated, perhaps not so well as here. Another interesting piece of architectural work is that shown in the last plate but one; a seat recess arched over and with a pediment above. The recess is flanked by fluted pilasters with no bases, and carved capitals from which the arch springs; upon these stand two narrower pilasters also without bases, and not central with the lower ones; which looks rather awkward, but the details generally are good and refined. It would have been more convenient if the plates had been numbered for reference.

The author thinks there is likely to be a taste for the type of Pompeian decoration, seeing that "the trend of architectural thought is now towards the Græco-Roman style," and the designs illustrated have been selected as likely to be useful to architects as sources of inspiration; some of them may no doubt serve that purpose. In any case, a beautiful book has been produced, which many besides architects may be glad to possess. The remarks at the end of the preface are somewhat exaggerated. To say that the style "overwhelms us by its invention, fecundity of expression," etc., and that "the inspiration of these decorations is infinite, and the language in which they speak is everlasting," is a little too exuberant a description of work of which facile charm is the chief characteristic. Superlatives should be kept for things superlative.

American Architectural Omniscience.

A RECENT issue of the "American Architect" contains a leading article in very large type containing the statement on the part of Professor Goodyear, 'Curator of the Department of Fine Arts, Museum of the Brooklyn Institute,' that another American architect, Mr. A. K. Porter, has made "the most important contribution to the topic of mediæval construction which has been published for many years." Those who are aware of the tendency of writers in American magazines to blow the trumpet continually for the art and artistic productions of their own country will probably be of opinion that a declaration by one American architect that another has made a most important discovery about Gothic architecture is a kind of statement to be taken with a good many grains of salt. The whole of this wonderful discovery seems to amount, first, to a statement that rib vaulting was brought into use to simplify the building of vaults without solid centering, the ribs being built on separate centre pieces. As far as we are aware, no one in his senses ever thought otherwise. Secondly, that the Lombard Italians practised it before the French, and therefore that they are the inventors of Gothic architecture. The statement that the Italians built these early vaults without solid centering is a mere assertion on the part of Mr. Porter, who did not see them built, and has no ground for the statement whatever beyond his mere assertion. Mr. Porter, in a history of Gothic architecture in which (after the fashion of American writers) he entirely ignored the existence of English Gothic as not worth taking into account, asserted that the pointed arch seemed in the transitional period to be used from mere caprice, giving as proof of this an example (Pontorson) in which only a large arch carrying a great superincumbent weight is pointed, and all the small decorative arches are round; that is to say, the constructive reason for using the pointed arch stared him in the face, and he could not see it. After that, we really cannot accept him as a witness capable of drawing sound deductions from the observation of ancient buildings. The fact that the pointed arch was first used for arches which had to carry great weight, while the round arch was retained for the smaller openings in the same structure, has been familiar to English students ever since Sharpe's "Parallels" was published sixty years ago; the Americans, who adopt such an attitude of superiority as teachers of architectural history, have apparently not discovered it yet. As to whether some Italian builders

used groined vaults before the French did is a matter of little importance in the history of Gothic; the French made a consistent style of it, and the Italians did not. Professor Goodyear's elaborate efforts to prove what must be obvious to anybody with structural common sense—that in a ribbed vault the ribs must have been built on separate wooden supports and the spaces filled in afterwards between them—are really amusing. He gives a photograph of the vault at Soissons, and proceeds to point out the change from large stones in the lower portion of the ribs to small ones above, and that the small ones mark where the centering began. Of course they do; the lower portions are where the ribs are worked on stones tailed into the wall, what in French is called the *tas de charge*; every one knows that who knows anything about Gothic at all. In a note to this illustration we are informed that above the *tas de charge* "the courses are made narrower in order to diminish the weight resting on the *cerce*" (Viollet-le-Duc's name for the centering template on which the groin was built). Whether this note to the illustration is Mr. Porter's or Professor Goodyear's is not apparent; the supposition seems to be that if the rib is built of a great number of small stones the total weight of the stonework is less than if it were built of fewer and larger stones! It seems almost puerile to explain that until the rib is completed as an arch up to the crown of the vault, the combined weight of its voussoirs comes on the centering with just the same weight, whether it is built of small stones or large. The whole article, in its absurd trumpeting of a great American architectural discovery, seems worthy of the Professor who has gone about Europe measuring all the failures and settlements of walls and vaults in ancient buildings, and endeavouring to persuade the world that these dilapidations are "refinements" of architectural design. It may seem rather harsh to speak in this tone, but really the absurd attitude of superiority assumed by American writers on architecture about things which we know far more about than they do does provoke one to a little plain speaking.

Responsibility for Defective Materials.

WITH regard to legal responsibility for dry rot, Mr. J. Davidson, secretary of the Yorkshire Federation of Building Trades Employers, has communicated to that body a brief but interesting note on a decision that has been recently recorded in the French courts. Two cases, of nearly identical character, were remitted, the one from Lyons, and the other from Rennes, to the Court of Cassation; but while the principle involved was the same in each case, the respective decisions upon it in the lower courts were at variance. In each case timber supplied by the contractor, according to a schedule of prices, and employed by him in building a house, became in a short time infested with dry rot. In each case it was shown that at the time when the timber was put in the contractor could not have known that it had in it the germs of this disease. The Lyons Court refused, and the Rennes Court agreed, to grant the owner damages against the contractor. In the Court of Cassation of the Seine the Lyons decision was upheld, and that of Rennes reversed. Upon this Mr. Davidson comments that the principle is therefore established in France that a building contract is not one of sale (in which case the contractor would be responsible for the materials he employed), but one of service. This view, while logical enough, is—perhaps for that very reason—hardly likely to find much favour in this country, where the consideration that overrides all others is that the owner who pays for a sound building ought to get it, and that if he does not get it, the man to whom he pays the money—the builder—or, alternatively, the man whom he pays to look after his interests—the architect—shall recompense him. No matter who suffers, or how unjustly, the building owner is to take no risks, and must be given his full pennyworth though the skies fall.

It is, of course, quite right that he should always get what he bargains for—his money's worth—when that is possible; but is it so very clear that, in case of an occurrence

for which, strictly speaking, nobody can justly be held responsible, such as an inexplicable outbreak of dry rot, the architect or the builder should incur all the resultant loss? Our law appears to assume that the architect and the builder ought always to be able to prevent dry rot, and should be made to suffer for any failure in this respect. The French law seems to recognise—what is possibly the fact—that occasionally the disease may be beyond foresight or prevention; and that in such circumstances the builder should not be burdened with the loss—that in fact he is not selling materials for whose soundness he is guarantor, but is procuring and using them on behalf of the building owner. This is perhaps a dangerous doctrine to set up, since it is perfectly obvious that advantage might occasionally be taken of it by unscrupulous traders, against whom the building owner is entitled to protection. Still, the judicial view of the subject in this country seems to be too stringently and persistently one-sided; the decisions nearly always giving one the impression of what, in the present state of knowledge or ignorance of the subject, seems to be a rather gratuitous assumption that dry rot can and ought in every case to be prevented; whereas the French Courts, upon what grounds we should very much like to be more fully informed, seem to have seen reason for holding that in some instances the disease is so insidious as to baffle skill and foresight. But the principle involved in the French decision is obviously larger than the question of responsibility for dry rot, since it affirms, as Mr. Davidson has pointed out, that a building contract is not one of sale, but one of service, and that therefore the builder is not responsible for defects that may develop in any material that he employs in the building owner's behalf. This may be an excellent theory, but it would be worse than folly to encourage any hope that it is ever likely to find acceptance in this country; where, however, the point is of some ethical and dialectic value, even though it may not directly affect practical issues.

The Question of Contractual Referees.

ONCE again the Courts have lent support to the contention that, as a general rule, it is undesirable for a corporation official to act as arbitrator in a serious dispute to which his employers are parties. This view has just been upheld by the Court of Appeal, consisting of Lords Justices Vaughan Williams, Farwell, and Kennedy, in an appeal by the Corporation of Bristol against an order by Master Macdonell, which had been affirmed by Mr. Justice Scrutton in Chambers, refusing to stay the action in which Messrs. John Aird and Co. sought to recover £171,215, balance on a contract sum stated at £1,927,977, for work, etc., for dock works at Avonmouth. The corporation contended that by the terms of the contract the matters in dispute should be referred to the arbitration of the corporation engineer. This contention raised a point that is only too familiar, and that, in several recent cases, has been determined in favour of those who held to the contrary. In the appeal under notice, counsel for the corporation cited decisions in which, on the other hand, it had been laid down "that there was no valid objection whatever to the enforcement of an arbitration clause making the engineer arbitrator in matters in regard to which he had himself played a very considerable part," and he argued that the advantages of making the engineer arbitrator were obvious—that his familiarity with all matters relating to the contract would prevent the expense of establishing the facts

before a gentleman who was not cognisant of the matters in dispute; and that there was no legal objection to the engineer acting as arbitrator because in his certificates he had taken views which, as arbitrator, he would be called upon to review. This contention did not prevail, the Appeal Court upholding two former orders declining to stay the action. Although, as we have said, this judgment confirms several others to the same effect, it must not be regarded as final, conclusive, and generally comprehensive. Similar cases that arise hereafter will no doubt be dealt with, as the present and all the precedent cases seem to have been, purely on their material merits, and judges may in future see sufficient reason to vary their decisions in accordance with specific circumstances. It would be very rash to assume from recent decisions that the very important question as to whether or not an architect or an engineer, being in effect a party to the contract, is *ipso facto* disqualified from acting as arbitrator in cases of dispute on points that arise in carrying out that contract, has been decisively answered in the negative. The controversy on the subject is not yet closed, and is still likely to be a fruitful cause of litigation, until contractors finally agree to support each other in insisting on provision being made for disputes of sufficient magnitude to be referred to independent arbitration. This condition casts no slur on the honour of architect or engineer; it simply recognises that, being human, he ought not to be placed in the invidious position of arbitrator between himself and another man: which is what, in its essence, the arrangement comes to. The objection to the contractual arbitrator may be said to work both ways. As it is commonly the arbitrator's own views that are in dispute, it is only rational to suppose that the average natural man will find it extremely difficult to avoid deciding in his own favour. On the other hand, the man with an uncommonly delicate sense of honour may, with "the pride that apes humility," think it more decorous to give the other side the benefit of the doubt. In either case, approximation to the proper judicial attitude is less evident than near approach to solemn farce. Nor should it be overlooked that the question of contractual referees is one that concerns engineers much more closely and with much more frequency than it affects architects; the work of the latter offering comparatively rare occasions of sharp contention, while it usually involves infinitely smaller sums. Most of the legal actions in which this question of contractual referees has arisen have referred to large engineering contracts; and the position of the architect is in so many respects different from that of the engineer as to deserve separate consideration; for it is very clear that if the architects' decisions were made liable to dispute and reference in detail at every turn, his authority, if not his occupation, would be gone, and his position would become perfectly intolerable.



FIG. 3.—ANTHEMION AND ACANTHUS FROM FRIEZE OF ERECHTHEUM.

THE GREEK ACANTHUS.

THE endeavour to establish the precise origins of certain forms in Grecian architecture has been largely without result, or at least the evidence which has been brought forward in support of some of the theories has been based on supposition rather than fact; hence, while a few things have been determined incontrovertibly—like the curvatures adopted to correct optical illusions, established by Penrose's measurements—many other matters have not advanced very much towards solution. Nevertheless, the pursuit is an interesting one, and not without profit. This is the case with the Corinthian capital and its acanthus enrichment. The familiar story, or rather legend, is that Callimachus the sculptor saw on a grave at Corinth a basket surrounded by acanthus leaves; the chance arrangement struck him, and he perpetuated it in the leaf-surrounded bell of the Corinthian capital. This account has been generally and somewhat uncritically accepted, and the belief is equally prevalent that the plant he saw and imitated was the *Acanthus spinosus* of Linnaeus. So general is this belief that travellers with Classic inclinations have sought the plant near Corinth, though fruitlessly. The term "Corinthian," as applied to an architectural style, has no contemporary Greek authority, but, accepting the name as generally understood, the Corinthian is not the earliest in which acanthus foliage is used; a misconception at this point is due to belief in the story outlined above.



FIG. 1.—STELA IN THE BRITISH MUSEUM.

the endeavour to determine what in nature was the origin of the ornament, and to trace its evolution in art, the appeal must be to actual remains of early Greek sculpture. Mr. A. H. Smith, in his "Catalogue of Greek Sculpture" of the British Museum, gives it as his opinion that the use of the acanthus leaf, as an ornament, was introduced at some time in the fifth century B.C., perhaps from Ionia, and it very soon became a very favourite ornament for stelæ in Athens. The British Museum possesses many examples of these stelæ; that shown by Fig. 1 is typical, and a general description of it may suffice for reference. The surface is smooth, and the triangular apex is filled with an anthemion (perhaps it is even advisable to add its pseudonym "honeysuckle ornament"). This springs from the centre of five acanthus leaves, which may be said to grow from the basal cutting off the acroterion of the stelæ; it is a representation on a flat surface, and in low relief, of a rosette of leaves seen from one side, spreading on the ground, the outer leaves touching it with their reflexed tips; the centre of the group, owing to this turning-back, presents to the observer part of the upper surface of the leaf, while the side leaves are seen in profile; the base and tip, as it were, are pressing the earth (see Fig. 2). The three lowest leaves thus grouped appear unchanged through a large number of examples.



FIG. 2.—ACROTERION OF STELE OF SMIKYLION.

It may be conjectured that the ornament was used on stelæ before it was employed for the decoration of buildings. The Erechtheum supplies an early date for this stage in its development, the temple being Ionic, and the date of its completion known to be about B.C. 409. The anthemion and acanthus ornament of the frieze (Fig. 3) is very familiar. It was the most beautiful combination of natural leaves with the conventional flower.

In this form also it decorates the necking of a column; the leaves are so small in proportion to the anthemion that they are adapted to the round surface without any alteration. Development is not carried on in this direction, for the anthemion falls away, and its place is filled by various tentative methods, until the acanthus fills the whole space. Examples are the lance-shaped leaves of the capital on the Tower of the Winds (Fig. 4) and the scrolls in the pilaster capitals from the Temple of Athene Polias at Priene—to be mentioned later.

Before dismissing the Erechtheum examples, it is not without interest to note that Callimachus's name is connected with the decoration, Pausanias (IX., 2, 7) telling us that a wonderful candelabrum was made for Athene there by the sculptor. The frequency of acanthus on funereal stelæ has a bearing on the story.

Another step on the way to the use of acanthus on bell capitals is that on the flat square sides of pilaster capitals; there are many examples of this in the Mausoleum Room at the British Museum. The typical stela arrangement, as shown in Fig. 1, is transferred direct to the square face of

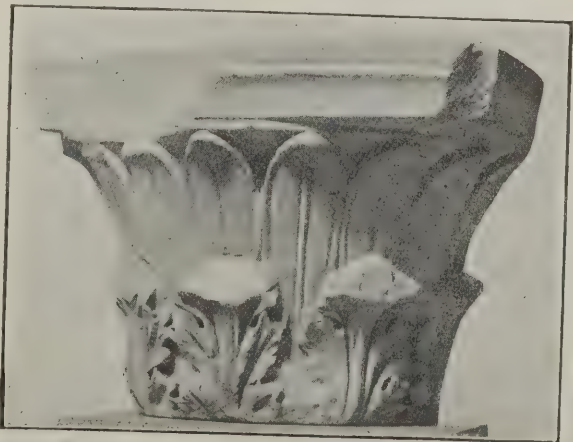


FIG. 4.—CAPITAL OF COLUMN FROM THE TOWER OF THE WINDS, ATHENS.

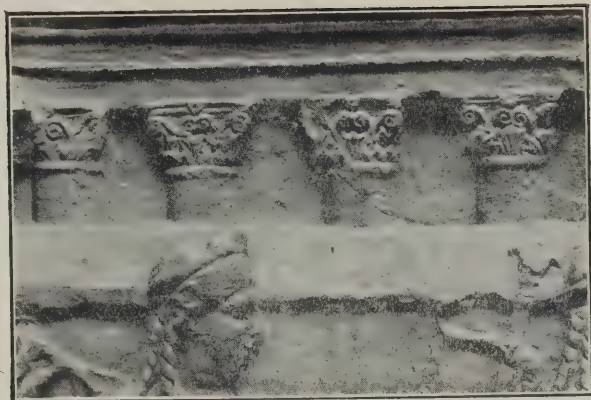


FIG 5.—CAPITALS SCULPTURED ON A SLAB ON A CORINTHIAN TEMPLE (POSSIBLY THAT OF APOLLO AT DELPHI).

the capital, the familiar group of three acanthus leaves being arranged along the base, and the anthemion stretching over the upper space, which is obviously larger than in the stèle acroterion.

In early examples of acanthus on bell capitals, such as that from the Tower of the Winds, and the fragment of a relief showing the columns of a Corinthian temple in the background (Fig. 5), there is a reminiscence of the three-leaf arrangement; the leaves also cling about the necking; the upper two-thirds of the capital from the Tower of the Winds is filled with a circle of erect lance-shaped leaves, very similar to those on an Egyptian bell capital in the British Museum assigned to the date 1330 B.C. (Fig. 6).

These experiments, for as such we must regard them, in filling the space above the single tier, culminate in the adoption of an upper circle of the same leaves. The pictorial treatment suitable to a flat slab has to be abandoned, and the perfected form of the Corinthian capital is attained. The examples given will suffice to demonstrate that the use of acanthus foliage as an ornament was frequent in the Ionic style, and that its translation from flat to curved surfaces brought about the change from its early naturalistic treatment to the conventional acanthus of the Græco-Roman and Roman styles called "Corinthian."

Granted that the acanthus of the Attic stèle is naturalistic, the way is clear for the consideration of the question, What plant was the model? To turn Aristotle's phrase, it is "such a plant as might have grown." It may be described in botanical fashion somewhat as follows:—The leaves are close to the ground in a rosette, spreading horizontally; each leaf is broad to the base, oblong in general



FIG. 6.

outline, margin sinuate-toothed, the divisions reaching about one-third of the way to the midrib. Now, the same description would bring forward the salient points of a first year plant of one of the great biennial cotton thistles, may be seen from a photograph of *Onoporden acanthus* (Fig. 7). This plant and the nearly allied *Onoporden Illyricum*, *Græcum*, and *Arabicum* are characteristic of the Levant flora. Not any of these, however, but the *Acanthus spinosus* of Linnaeus is accepted generally as the original nature of the acanthus of art, perhaps because the former considered has been only the late development which naturalism has yielded to the requirements of the position.

Yet if likeness in line and grouping has any bearing on the question, *Acanthus spinosus* could not have been the origin of the acanthus of the stèle; it forms a prickly thicket of leaves; there is nothing to answer to the rosette-units of cotton thistles. Not only is the rosette arrangement

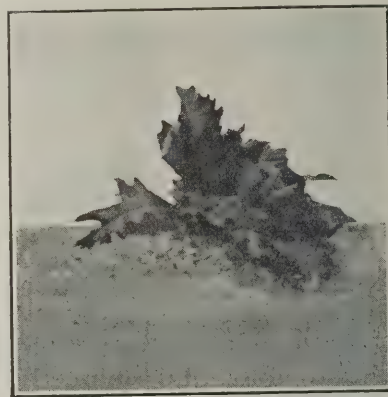


FIG. 7.—ONOPORDEN ACANTHUS.

is entirely wanting, but the shape of the individual leaves differs from the sculptured leaves on the stèle; the stalk is leafless, or very narrowly winged, and erect from the base; the narrow divisions of the blade fit between those of neighbouring leaves at all angles and levels, with no obvious apparent rule than that of intercepting all the light without overshadowing each other. A basket placed on leaves of *Acanthus spinosus* might as well, for artistic purposes, be balanced on a quick hedge; and even a legend must be consistent enough for probability.



FIG. 8.—ACANTHUS (NATURAL) FROM A DRAWING BY JOHN RUSKIN.

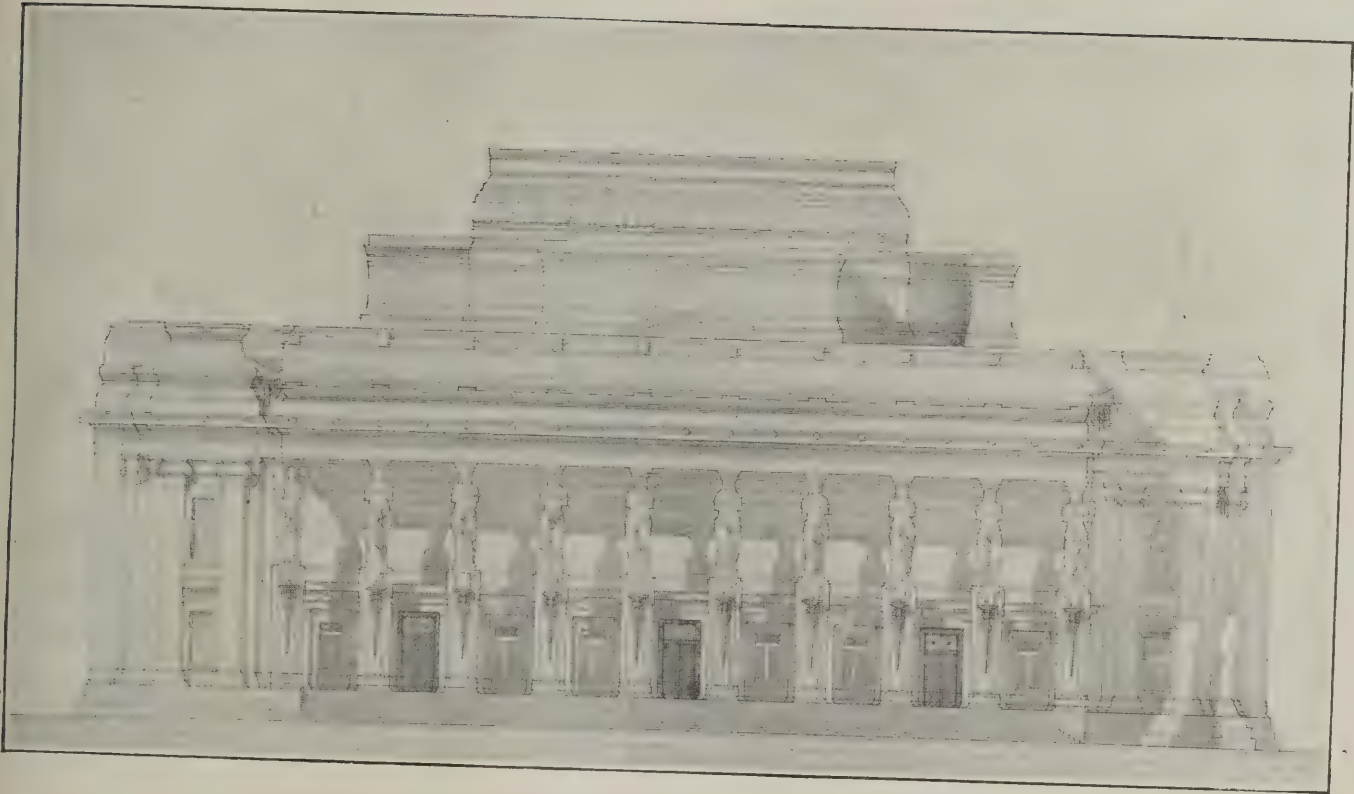
Greek references to the artistic acanthus by name are rare, and the few instances there are refer to small objects such as the goblet carved from ivy wood mentioned by Theocritus (Idyll I., 55). Ovid possibly derives from a Greek source his description of a mixing bowl, "Summus inaustr crater erat asper acantho." (Metam. XIII., 701). So in default of literary evidence, the main weight of the argument for identification must rest on actual likeness, and in this connection we have other leaves, such as those of parsley, celery, ranunculus, and many root leaves of baceous plants, which seem equally well fitted to have been the origin of the "acanthus ornament."



DESIGN FOR GUILDHALL (SOANE MEDAL)



COMPETITION). BY BERTRAM LISLE ("VISTA").



Front Elevation.

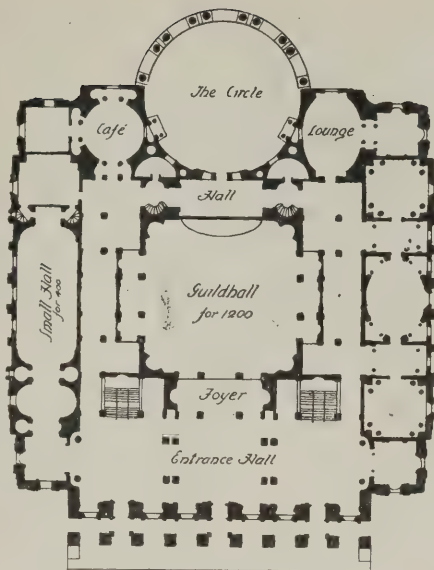


DESIGN FOR A GUILDHALL (SOANE MEDALLION COMPETITION). BY PIET DE JONG ("ANTÆ").

DESIGN FOR A GUILDHALL.

(See Centre Plate.)

We publish as a Centre Plate in this issue the design for a guildhall which was submitted by "Vista" (Mr. Bertram Lisle) in the recent competition for the Soane Medallion of the Royal Institute of British Architects. We have special interest in publishing this design, for the reason, already stated in these columns, that we consider it to be the best of those submitted in the competition. The Council of the Institute, while not considering any of the designs submitted to be worthy of the medallion, divided the £100 equally between "Circle City" and "Antæ," placing "Vista" third and awarding the author a certificate of Honorable Mention. The design of "Antæ" (Mr. Piet de Jong, of Leeds) is also illustrated in this issue. Mr. Horsley, in his criticism of the designs, said: "'Antæ's' plan is of the type of an *hotel de ville*, which would be quite suitable to the centre of a large town; but, on the other hand, the elevations, notably the facade adorned with caryatides, which give an unusual touch of gaiety to the design, are very appropriate to the open position proposed. The weak spot in the scheme is that the central guildhall is too small. . . . 'Vista' well deserves the Certificate of Honorable Mention which he has won. In my opinion his plan is the best in the competition. . . . The grouping of the



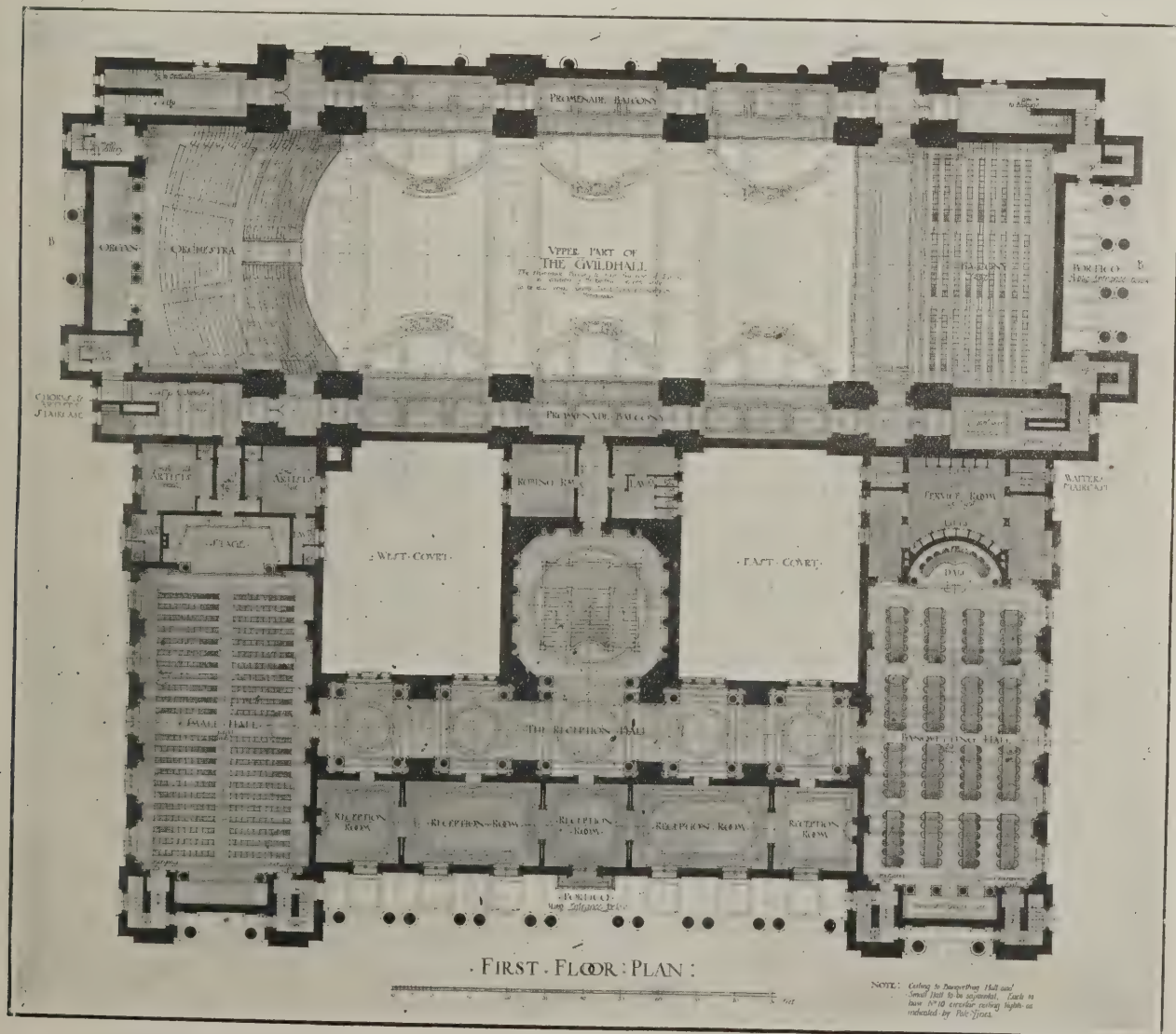
DESIGN FOR A GUILDHALL. BY PIET DE
JONG ("ANTÆ"): SKETCH PLAN OF
GROUND FLOOR.

reception rooms at the head of the principal staircase, between the banqueting hall and the small hall, on the first floor, is particularly happy. Again, the guildhall itself is admirably placed and excellently designed for its purpose.

NEW POLICE HEADQUARTERS FOR EDINBURGH.

The new headquarters of the Edinburgh City Police, with the new Court Room, and the Weights and Measures Offices, are to be erected on a site in the Grassmarket, Edinburgh. The frontage to the Grassmarket extends 203 ft., and the eligible building depth is 188 ft. As will be seen from the accompanying ground plan, the disposition of the ground permits of the administrative block facing the Grassmarket. Immediately in the rear is the court room block, and still farther in the rear is the cell block. Direct inter-communication is had with all three buildings. On a site the three sides of which have surrounding buildings, this arrangement permits of the premises being all favourably situated in respect of lighting, and secures a free play of air and through-draught to all parts of the buildings. Ample courtyards are also obtained.

The administrative block consists of four floors. As the Grassmarket is a wide open square, the external architecture demanded careful consideration consistent with the desire for stringent economy in the design of the whole buildings; and breadth of treatment and proportion are more relied upon than expensive repetition of details. The building material is stone, and it is suggested to have the ground-floor storey in a cream-coloured freestone, the upper



DESIGN FOR A GUILDHALL (SOANE MEDALLION COMPETITION). BY BERTRAM LISLE ("VISTA").

storeys being carried out in a combination of light freestone in the windows and other architectural features, and red sandstone in courses for the wall faces.

On the ground floor are the weights and measures offices, lost and found property office, charge office, with lieutenants', waiting, and witness rooms, etc. The first floor is allocated to the chief constable, including offices for the deputy-chief constable, chief constable's clerks, criminal investigation department, statistical department, etc. On the second floor are record rooms, police surgeon's office, procurator fiscal and clerk of courts' rooms, dwelling house for deputy chief constable, etc. The third floor is set apart for tailors' workshop and stores, dwelling-houses for chief housekeeper and lieutenant on duty, etc.

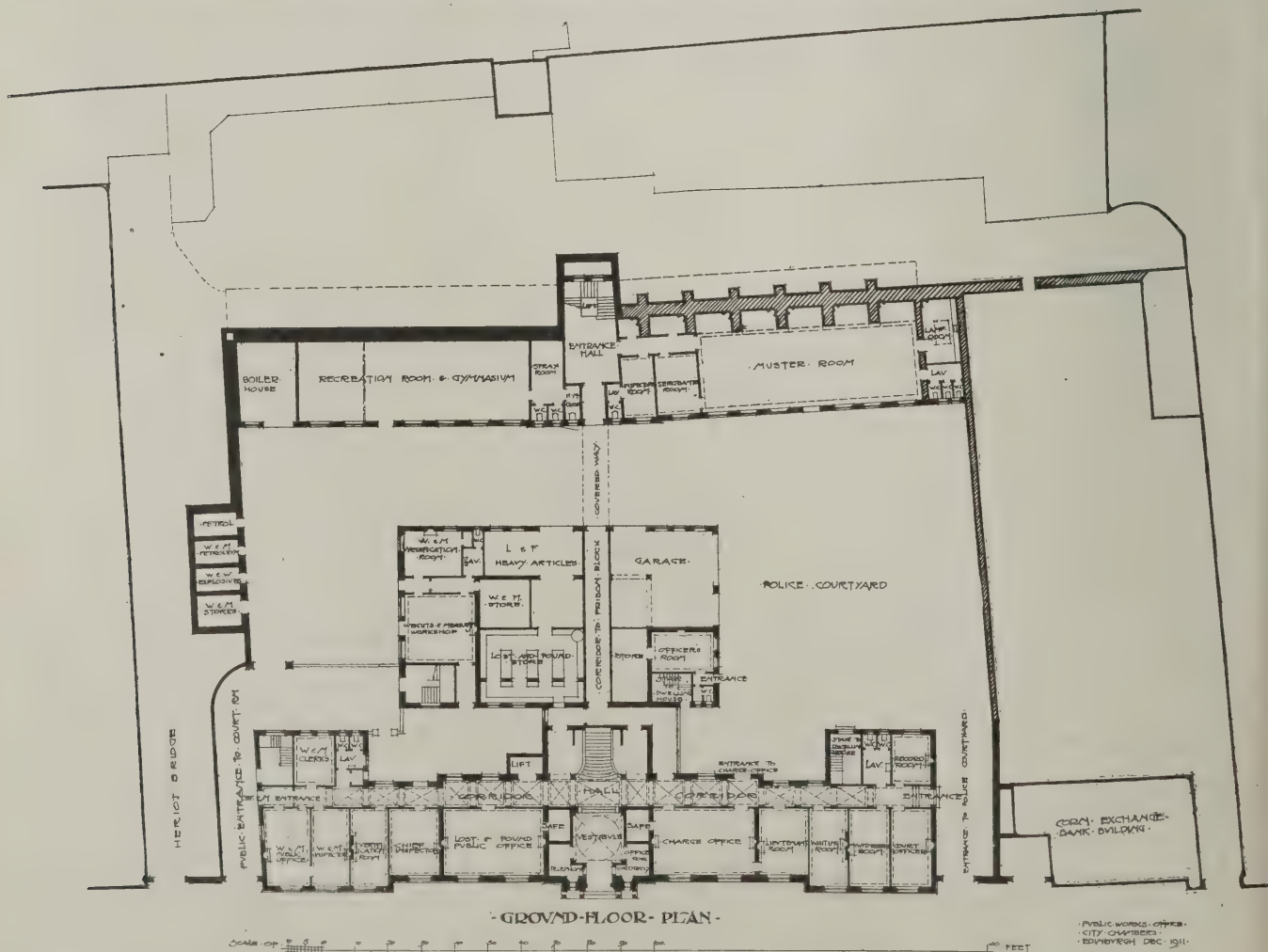
In the court room block, to ensure quietness, the court room is placed midway between first and second floors of the administrative block. The court room is accessible on three sides, one forming

a large waiting hall for witnesses, with solicitors' consultation room. Judges and other officials' retiring rooms are provided. The fourth side—that to the rear—is in direct communication by a bridge with the cell block, and has rooms for accused persons and court officers. The public, and witnesses, enter the buildings by a special stairway leading from the courtyard. In the substructure of the court-room block are two floors, devoted to various purposes, chiefly stores, but also comprehending a garage for police vehicles, and the dwelling-house of the officer in charge of the garage.

In the cell block there are 111 cells, namely: ordinary, 102; association, 3; and observation and examination cells, 6. The dimensions are: ordinary cells, 11 ft. by 7 ft. by 10 ft. high = 770 cubic feet each; association cells, 15 ft. by 9 ft. by 10 ft. high = 1,355 cubic feet each; observation cells, 11 ft. by 7 ft. by 10 ft. high = 770 cubic feet each. The ground floor contains the police-

muster room, gymnasium and recreation room, also lamp-cleaning room, and inspectors' and sergeants' rooms, storeroom, boiler-house, etc. In a central position is the entrance to the cells, and a landing conveys the prisoners to their respective landings. Two cell pavilions are placed right and left respectively of the staircase and contain turnkeys' and searchers' rooms, association and observation cells. The two upper floors of cells are reached from galleries having strong enclosed railings, the open wells being filled with open gratings, thus permitting light from a top cupola to penetrate to the separate levels, and allowing of a free passage of air throughout the cell block.

Mr. J. A. Williamson, A.R.I.B.A., city architect, has prepared the plan, and the estimated cost is apportioned as follows: Police headquarters section including painter work, heating, ventilation, and electric lighting—£43,750; weights and measures office section—£2,500.



NEW POLICE HEADQUARTERS AND WEIGHTS AND MEASURES OFFICE, EDINBURGH.

J. A. WILLIAMSON, A.R.I.B.A., CITY ARCHITECT.

OBITER DICTA.

In Praise of the Plumber.

He had often realised that if the principle underlying the constructional work of the plumber were better understood by the public generally they would be the better able to appreciate some of the many difficulties with which he had to contend, and, instead of bestowing upon him so much unwarranted abuse, they would look upon the plumber as a benefactor to his race in providing the conveniences and luxuries of home life, which was his rightful position.—*Mr. W. H. Allen, at Cardiff.*

Architecture and Colour.

It is quite certain that, where colour is used at all to decorate a building, it should be used systematically throughout. The effect of a series of mural paintings in a large interior otherwise uncoloured is merely to distract the eye from the whole interior to the patches of painting. Considered in their relation to that interior, they are, however excellent as pictures, mere irrelevant masses of colour, which usually conflict with the architectural effect of the whole. In fact, the finer the interior as architecture, the more irrelevant and distracting do mural paintings usually appear. There is a discord of two arts where there should be a harmony, or where one should reign alone. And yet whenever architecture has been the predominant art, it has nearly always used colour as an instrument of its own, whether in the form of paint or mosaic or stained glass. But in such cases the

decorator has been either the servant of the architect or subject to an architectural tradition which entirely controlled the practice of his own art. . . . The moral is that the architect should always be the master of his own house.—*"Times" leading article.*

Hills an Architectural Opportunity.

The fact is that bridges, viaducts, steps, and terraces are the making of a city from an æsthetic point of view. Any city, however, flat, like Manchester, can have fine streets if, like Manchester, it will pay for them; but few cities can have that combination of architecture and natural beauty which arises from a hilly situation. Rome, Edinburgh, Scarborough, and other hilly cities have contrived to use natural features to their advantage and to the never-ending delight of visitors, but Sheffield, with almost equal opportunities to some of these, has not yet, at least in its central area, tried to do this.—*Mr. H. L. Paterson, in a Sheffield newspaper.*

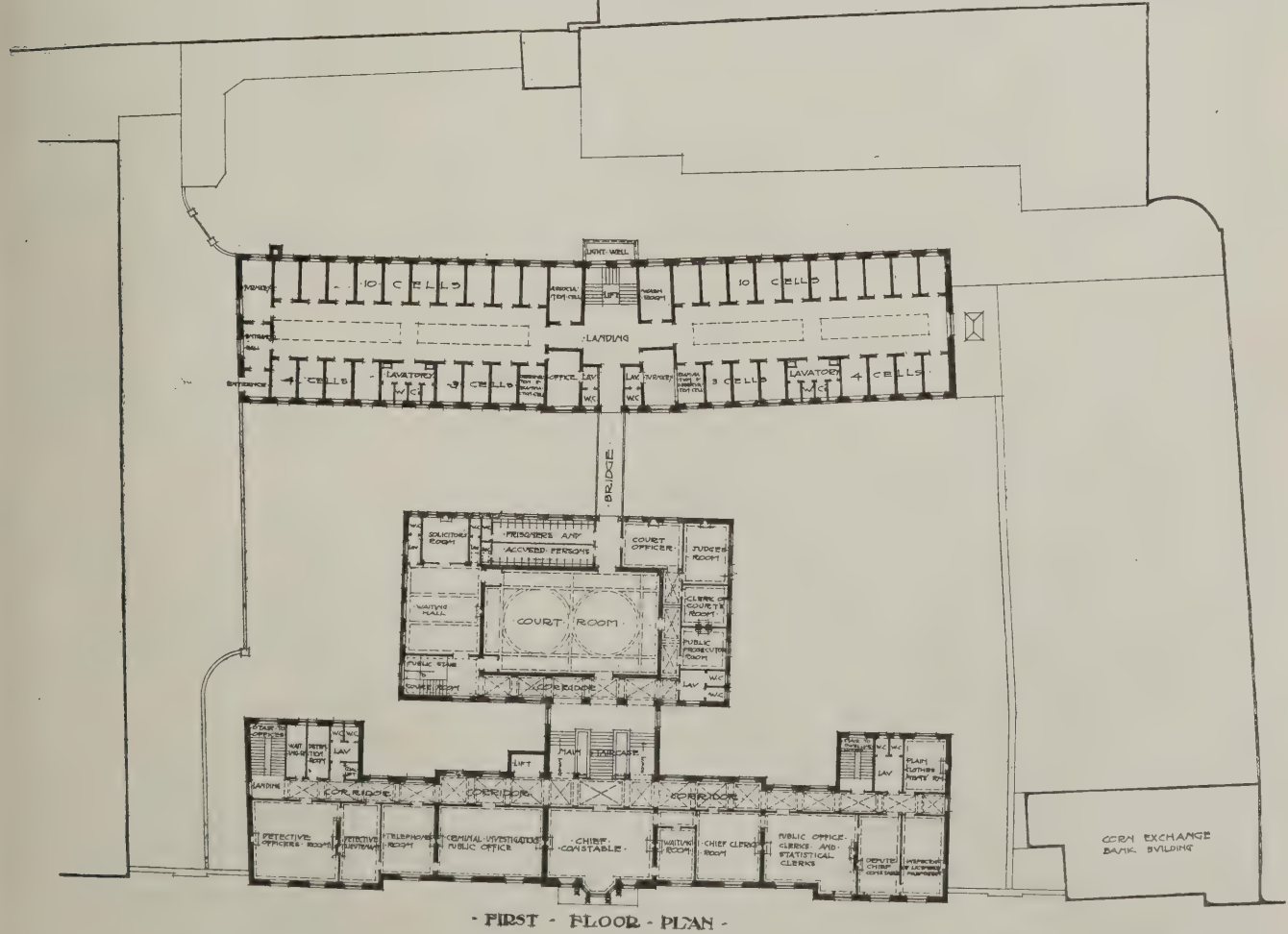
An Elastic Carpet for Roads.

Would it not be well to endeavour to provide an elastic skin or carpet to lie between the vehicle and the bearing crust? A material to be used for an elastic carpet for the road crust must have a viscous liquid quality. Research had been made with pitch and with bitumen, and the conclusion had been reached that pitch would not give satisfactory results, but bitumen would do so. It was expected that with such material laid on the top

of the main road crust and integrated with it a valuable road protection would be supplied, so that the road crust would be practically permanent, the upper protecting sheet being re-made up and re-laid as required. To fulfil the ideas of providing a partially elastic carpet, which would carry out the silencing of the rolling noise of vehicles and reducing shock, the engineers at the Road Board had already decided on experimental roads which would consist of a strong road crust intended to carry the weight of the traffic, and on this to superpose the renewable carpet.—*Sir John H. A. Macdonald, lecturing at the Royal Institution.*

The Architect's Potent Spell.

It may be fairly open to argument whether a great architect has not as much influence on the culture of his own age and the ages which follow it as a great poet or a great writer of fiction. The ballad-writer and the novelist have claimed for themselves in this matter of moulding the thoughts of men more power than the legislator. Possibly the architect may wield a more potent spell than either. The poet and the novelist may be as time goes on more praised than read. . . . The thoughts of men are turned into new channels, and every age demands expression of its emotions and convictions in its own way. But the work of the architect remains and cannot be ignored. We cannot put his books upon the shelf. For better, for worse, his buildings stand; they become part of our daily life, evoking admiration or



NEW POLICE HEADQUARTERS AND WEIGHTS AND MEASURES OFFICE, EDINBURGH.
J. A. WILLIAMSON, A.R.I.B.A., CITY ARCHITECT.

provoking maledictions every time we pass that way. Great is the responsibility of the architect and those who have given him his commission.—*Oxford Times*.

Modernism v. Authority in Architectural Design.

He entered a protest against the tendency in certain teaching of the day to stereotype the classical ideal in architecture, which was opposed to the flexibility and versatility of mind. He then spoke of the domination in France and Italy of classic design of the last two or three centuries, remarking that traditional mediæval architecture had been completely suppressed, and that the influence of the French schools of architecture in that direction had, in his opinion, been fatal to the more domestic, educational, and ecclesiastical architecture of the country, that side of practice which must occupy the majority of professional talent.—*Mr. Howard Seth Smith, before the Birmingham Architectural Association.*

Hard-headedness and Architectural Beauty.

They might take it that no passion possessed the public for beauty in building. They were a hard-headed, practical people. When he went into our manufacturing towns, or for that matter into any of our towns and cities, and saw what this practical hard-headedness had produced, he wished that they were soft-headed, soft-hearted, and unpractical. The way of architectural salvation would be a long and a hard one.—*Mr. J. S. Gibson, before the Glasgow Institute of Architects.*

The House Jobber Quack.

There are quacks in buildings as there are in medicine and everything else. The quack house jobber may be one of the many working jacks-of-all-trades, who professes to do anything. He usually poses as a "practical man," which generally means that he is utterly ignorant of all points of theory; he does no good—possibly makes matters worse—and charges well for it.—*Mr. Harold Griffiths, at the Auctioneers' Institute.*

Paint the Preservative.

The builder of the Tay Bridge was once asked how long his work would last. His reply was, "As long as it is painted." As a matter of fact, the bridge was being painted from year's end to year's end, and 500 tons of paint was used upon it annually. The preservative value of paint could not be over-estimated.—*Mr. Arthur Seymour Jennings, before the Bristol Society of Architects.*

Moral Sanitation.

In 1875 the great Public Health Act gave us the model building by-laws, and with them streets of monotonous cubicles for dwellings. In pulling down the old streets built before the Public Health Acts, we had obtained priceless benefits in the way of sanitation; but he [Prof. Adshead] was afraid we had lost almost as much in moral sanitation as we had gained in physical, and in applying the Town Planning Act and the new science of town improvement we had got to try to recover the beauty that was lost with the disappearance of those old streets, and, whilst continuing to improve our sanitation, to increase moral and æsthetic amenities at the same time.—*Prof. S. D. Adshead, at the Municipal School of Technology, Manchester.*

EARLY PRECAUTIONS AGAINST FIRE.

The early precautions against fire adopted by the City authorities were rather remarkable. At a very early period any householder who dared to cover his house with thatch generally had the mortification of witnessing his dwelling destroyed by the authorities. In the year 1302, one Thomas Bat, citizen, came before the Lord Mayor and Court of Aldermen and bound himself and all his rents, lands, and tenements, to keep the City of London indemnified from fire and other losses which might occur from his houses covered with thatch, in the parish of St. Laurence, Candlewykestreet, and he agreed that he would have the said houses covered with tiles, about the Feast of Pentecost then ensuing. Furthermore, in case he should not do the same, he granted that the Mayor, Sheriffs, and Bailiffs of London should cause the said houses to be roofed with tiles, out of the issues of his rents aforesaid.

In the reign of King Richard the First (says Mr. Francis Edwin Tyler, in the "Home Counties Magazine"), the ward-motes ordered that all persons who dwelt in great houses within the wards should have a ladder or two, ready and prepared to succour their neighbours in case of fire; further, that all persons should have in the summer time, and especially between the feasts of Pentecost and St. Bartholomew, before their doors, a barrel full of water, for quenching such fire, if it be not in a house which had a fountain of its own; also that reputable men of the Ward, with the Aldermen, should provide a strong crook of iron, with a wooden handle, together with two chains and two strong cords, and that the Beadle should have a good and loud-sounding horn.

The first mechanical contrivance for extinguishing fire was a syringe or squirt. It was 2 ft. in length, and when in use was fastened by means of straps to the body of a man. Some were worked by three persons, two of whom held the squirt and nozzle, whilst the third worked the piston within. These early engines were much in demand, and after the Great Fire they increased in large numbers, ultimately giving way to improved fire engines. Two years after the disastrous conflagration of 1666, the City Corporation established a force of men, styled the fire-police. Each parish was provided with the following implements: leathern buckets, pickaxes, sledge-hammers, shovels, and brass hand-squirts.

The enormous damage caused by the Great Fire led to the establishing of insurance offices. The first office, the Phoenix, was founded in 1682, and its meetings and business transactions were held at the famous Rainbow Coffee House in Fleet Street. This was followed by the Hand-in-Hand (1696), and a few years later, 1706, the Sun Office was established. Each individual company kept its own engines and firemen, the latter wearing distinctive liveries.

Outbreaks of fire were very frequent, and in 1708, for the more effectual preventing of fires in the city and suburbs, it was enacted by Parliament: "That the churchwardens of each parish be empowered, at the charge of their respective parishes, to fix upon the several main water-pipes in the streets, stop-blocks or fire-cocks, also to provide a large hand-engine with a leathern pipe and socket to screw upon the fire-cock. And for the future all party walls to be of brick or stone, except the houses on London Bridge."

The year 1798 witnessed the formation of a body of men called the Fire Watch or Guard. A few years later the chairman of the Globe Insurance Office made an attempt to form a general fire-engine establishment, but it proved an utter failure. However, in 1832, eight of the then existing insurance companies formed an alliance, and thus started the London Fire-Engine Establishment. By its rules London was divided into five districts, and each was supplied with an engine house or station. There were also two floating stations, one being at Southwark Bridge, and the other at Rotherhithe.

These floating engines required over one hundred men to work them, and they threw water at the rate of two tons a minute. Gratuities were awarded to policemen who gave an alarm of fire at the nearest station. It is also worthy of note that bystanders were liberally paid for any assistance they rendered to the firemen in their endeavours to extinguish outbreaks. It required some thirty men to work each engine, so that at a large conflagration some five hundred bystanders, or even more, were employed.

We get a very faithful and amusing picture of these early parish engines in Dickens's "Sketches by Boz."

Steam was first applied to work a fire engine in 1830.

At the end of the seventeenth century a business which included the manufacture of pumps, and other apparatus for the extinction of fire, was established in Cross Street by Nathaniel Hadley. He subsequently removed to Long Acr in 1738, where he erected the first fire engine factory. In the course of time the style of the firm became Hadley and Simpkin. Mr. Moses Merryweather joined the firm as an apprentice in 1807, and eventually became head of the business.

When Nathaniel Hadley commenced business as a maker of fire appliances the manual engine of the day was a small machine drawn by means of a trolley and worked usually by sixteen men. It was an excellent engine for pumping purposes, having regard to its size, however deficient it may have been in provision for rapid transport and in other ways. The first great improvement was made in 1792, when metal valves were used in place of leather ones. The engine remained unaltered and was still of little value. Gradually, however, engines with larger wheels were constructed, having a seat for the driver and a hose-box upon which the men could ride.

It remained, however, for Mr. Moses Merryweather to construct an engine more conveniently arranged and more powerful in regard to weight and size than any of its predecessors. This important event took place in 1851, when he launched his "London Brigade Manual." Since 1851 many improvements have been made, and especially in 1885, when a new pattern valve was invented.

The first steam fire-engine was designed in 1829. Little was heard of its existence until 1879, when several similar engines were placed upon the market and were eagerly bought.

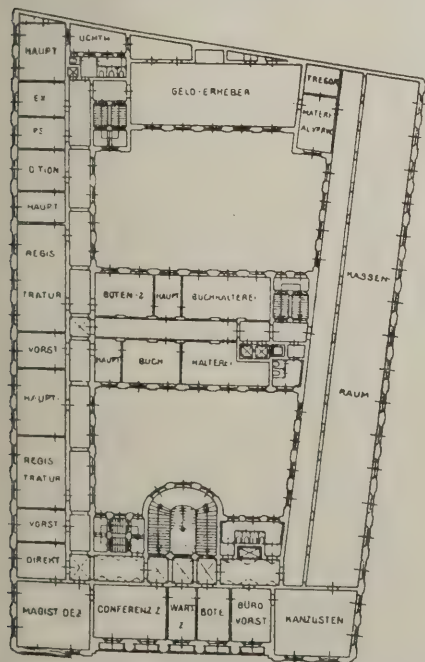
Another firm which for three-quarters of a century has been prominent in the manufacture of fire-engines and appliances is that of Messrs. Shand, Mason and Co. In 1860, the London Fire Establishment hired from them the first steam fire-engine on wheels. A second engine was purchased, and won the first prize at

London International Exhibition of 1862
In July 1863, the famous competitive trials took place at the Crystal Palace when a committee of scientific men headed by the late Duke of Sutherland, with the able assistance of the late Sir Eyre Massey Shaw, K.C.B., as secretary, raised a sum of £700 to be distributed in prize-money for the best steam fire-engine. The result was, one half of the prize-money was adjudged to Messrs. Shand, Mason and Co., while the other half was divided between two other competitors.

In 1862 a Parliamentary Committee was appointed to inquire into the existing arrangements for the protection of life and property against fire. A bulky report was issued, and the outcome was that a new force was established, under the control of the old Board of Works, the title of the force being "The Metropolitan Fire Brigade." Captain Shaw was given the post of superintendent. The force comprised about 350 officers and men. The central station was in Watling Street, in the City of London.

FIRE PRECAUTIONS IN HOSPITALS.

In a paper on "The Lay-out of Hospitals and Sanatoria," read before the Institute of Sanitary Engineers, Mr. A. Alban H. Scott, M.S.A., made a brief reference to fire precautions. Every ward, he said, should have at least two possible exits in case of fire, and the doors should be so arranged that (at least on the ground floor) a bed can be wheeled right into the open, and in the case of upper floors it should be carefully considered whether it is not advisable to have sloping ways as a second means of exit, in lieu of the usual staircase. Such a sloping way would allow of the beds being taken right down to the ground level, would cost no more for construction, and would not be more unsightly. Hydrants are seldom fixed into the actual wards, but should be so placed in corridors or outside, or both, and the hose of sufficient length so that a fire at any point of the building can be reached, and all main rooms and wards should be fitted with automatic sprinklers. In all cases the whole of the buildings throughout should be of fire-resisting construction.



GAS OFFICES, BERLIN : GROUND-FLOOR
PLAN.



AN EXAMPLE OF MODERN GERMAN ARCHITECTURE: NEW OFFICES OF
THE CITY GASWORKS, BERLIN. LUDWIG HOFFMANN, CITY ARCHITECT.

FIRE PREVENTION NOTES.

*Automatic
Sprinklers.*

Automatic Sprinklers. The value and prompt efficiency of automatic sprinklers can seldom have been more strikingly illustrated than it was a short time back in the case of a motor-manufacturers' premises. Grinnell heads were being fixed throughout the building ; but before the installation was completed, the back-firing of a motor caused an outbreak in the testing-room. Very fortunately, this section of the installation had been finished, and was in working order. The sprinklers immediately began to act, and the outbreak was at once extinguished, very trifling damage being done to the premises. Sprinklers are now such an old-established institution that very probably this is by no means the only instance in their history in which they have got to work almost as soon as they were ready for it.

Another and more recent instance of the efficacy of the Grinnell sprinkler and fire alarm in preventing serious fires is reported from Lancashire. It appears that a fire broke out on January 31st in the cotton mixing room of the New Victoria Cotton Spinning and Manufacturing Co., Ltd., Bury, Lancs. Nine sprinkler heads came immediately into operation, and the fire alarm gong rang. The outbreak was rapidly extinguished, and the entire damage from fire and water was only about £250. The company have written to Messrs. Mather and Platt, Ltd., sole proprietors of the Grinnell sprinkler, to say this was the first occasion on which their sprinkler installation had been

called into operation, and they are delighted with the manner in which it works. They add that but for the prompt action of the sprinklers the fire might have reached serious dimensions. The number of fires extinguished in all classes of risks by the Grinnell sprinkler now exceeds 15,000.

*The King and
the Firemen.*

The King and the Firemen. It is evident that his Majesty the King is very keenly interested in the doings of firemen ; and, not for the first time, he has taken the trouble to express his sorrow and sympathy in a case of accidents occurring in the course of duty. Mr. A. R. Dyer, the divisional officer (north) of the L.C.C. fire brigade, who has just been honoured with the King's gracious message, was standing on a platform or floor about 14 ft. above the ground-floor of a White-chapel building, which was alight, when a portion of the roof fell, tilting the platform, from which Mr. Dyer was thrown to the ground-floor. At the hospital he was found to be suffering from fracture of the skull, concussion of the brain, and fractures of the collar-bone, shoulder-blade, and three ribs. Notwithstanding the terrible extent of his injuries, Mr. Dyer, it is gratifying to learn, is making satisfactory progress towards recovery. Another instance of self-sacrificing devotion to duty at a recent fire is recorded in the case of station-officer William Cox, who has just been awarded the London County Council's silver medal for "extraordinary bravery." A fire was well alight at a confectioner's shop in the

Mile End Road, and Cox, hearing that there were persons in a back room on the first floor, made his way through dense smoke and intense heat, and rescued from the room a police-sergeant, who was lying unconscious, and a little girl. The little girl he passed out of the window, but the police-sergeant had to be dragged down the staircase through the stifling heat and smoke. Another fireman ascended the staircase to help Cox with his burden; and Cox, on reaching the outer air, collapsed, and had to be revived by means of artificial respiration. We yield to none in our admiration of the courage and devotion of our firemen; but this feeling is too often tinctured with regret that so much suffering and self-sacrifice ought to be unnecessary, and should be rare indeed when at length the subject of fire-prevention is more generally and more intelligently understood.

Brigade Competitions.

In last month's Fire Prevention Notes, approval was expressed of the practice of arranging competitions for firemen. Apparently the London County Council Fire Brigade Committee are quite alive to the advantages of pitting men or brigades against each other in trials of skill, for they have just resolved to recommend to the Council "That members of the London Fire Brigade be permitted to take part in the horsing and driving competition for fire brigades at the International Horse Show, 1912, provided that, if any money prizes be awarded to the men, the money shall be handed over to the London Fire Brigade Widows' and Orphans' and General Benefit Fund"—surely a wise, as well as a benevolent provision, getting rid of any mercenary element, and substituting for it an encouragement of the purely humane feeling which seems to animate every member of the brigade. It may be remembered that at last year's exhibition at the Horse Show, the London Brigade representatives were successful in winning the challenge cup and a number of minor prizes. As horses are so rapidly disappearing from the brigade, it seems to be only a question of time for fire-brigade competition to become strangely irrelevant at a horse show.

Architecture of Fire Stations.

It is gratifying to notice that, in connection with the proposed erection of a fire station at the junction of Eton Avenue and Lancaster Road, N.W., the question of architectural treatment has been raised. It has been found that it will be necessary for the Council to enter into covenants as to the user of the site which will preserve the amenities of the adjoining portions of the estate of the freeholders (the authorities of Eton College), and will prevent the erection on the site of any building other than a fire-station except a building in conformity with the adjoining property. A fire-station being innately noble by its purpose, we have often wondered why greater efforts have not been made to give architectural expression to that nobility. There is no reason at all why the front of a fire-station should be destitute of artistic feeling, nor why one stereotyped style should be thought to be universally applicable to the often widely divergent environment found in various quarters of a large town. Most of the stations in and around London have, it is true, the dignity of simplicity; this negative virtue, however, is not enough.

BOOKS.

Public Health Law.

As the public health laws grow continually in complexity, guides to their interpretation become, *pari passu*, increasingly necessary, and perhaps sufficiently numerous. Mr. Bertram Jacobs has just issued a manual which, beyond its undoubted merit of being the latest in the field, is less fortuitously distinguished by its clearness of statement and its firmness of exposition. Moreover, more than the usual amount of attention has been paid to the not unimportant subject of what may be called proportional representation—that is to say, it is clearly recognised that certain points require much fuller treatment than others. For example, Parts III. and IV. of the Public Health Act, 1875, the Public Health Acts Amendment Act, 1890, and the further amending Act of 1907, are treated in fairly complete detail, these containing the undoubted substance of our sanitary legislation; but the remaining parts of the Act of 1875, and other statutes than those mentioned, are treated more or less fully according to the author's view of their importance or of the directness of their relationship to the subject of the work. Manuals of the law are, roughly speaking, of two classes—those very elaborate treatises that are intended for the use of the legal profession, and those more definite and dogmatic expositions that are destined for the enlightenment of the laity. Seldom indeed can it be said of a law-book that it will serve both these purposes equally well, and we should not care to advance such an inherently incompatible claim for the book under notice. Still, however diffidently we may venture to suggest that this manual will be found useful even by the professional lawyer, we have no hesitation in affirming its value to all those who, not being lawyers, are, however, constrained to acquire a sound working knowledge of the health laws, whether for the purpose of preparing for any of the several examinations in which such knowledge is required, or for that of administering, in some capacity, the laws here expounded.

The drain or sewer question is dealt with at some length, and the definition given by the author is fortified by the citation of many judicial decisions, as well as illustrated beyond possibility of misconception by surely the roughest diagram that ever found its way into print. Both definition and diagram, however, are characteristic of the plain common-sense method of treatment observable throughout a book in which concise expression not only makes for clearness, but enables the author to deal with his subject quite comprehensively yet within comparatively small compass.

A Manual of Public Health Law. By Bertram Jacobs, Barrister-at-Law. London: Sweet and Maxwell, Ltd., 3, Chancery Lane, W.C. Pages xvi. + 204, 8½ins. by 5½ins., price 7s. 6d.

The Study of Church Buildings.

In a new edition of Mr. Sidney Heath's admirable little book on "Our Homeland Churches and How to Study Them," the work has been remodelled, extended, and further illustrated, a new feature being a series of carefully drawn architectural details by Mr. J. R. Leathart, while the glossary has been amplified to three times its original bulk. The book has been altered as to its *format*, and is now uniform with the "Homeland Pocket Book" series. Consequently it

can be easily slipped into any ordinary pocket, and cheerfully borne therein without the least feeling of encumbrance. The illustrations have been chosen with unusual care, and are supported by letter-press that is not only legible and even beautiful as a matter of typography, but is interesting and informative as to its subject-matter.

Our Homeland Churches and How to Study Them. By Sidney Heath. With many illustrations from drawings by J. R. Leathart and others, and from photographs. (The Homeland Pocket Books, edited by Prescott Row and Arthur Henry Anderson.) London: Frederick Warne and Co., Chandos Chambers, 15, Bedford Street, Strand, W.C. 198 pages, 5½ins. by 4½ins., price 2s. 6d. nett.

BIRMINGHAM COUNCIL HOUSE EXTENSION.

The Birmingham Council House extension is now rapidly approaching completion. The architects are Messrs. H. V. Ashley and Winton Newman, of London. Last week Mr. Ashley read a paper on the subject before the Birmingham Architectural Association, at the Exchange Buildings, Birmingham, when Mr. C. E. Bateman (president of the association) occupied the chair.

Mr. Ashley, in the course of his paper, said it was interesting to note that the plans in the second competition had been very little altered. The site was practically four-square. On the east, or Margaret Street, front was the Education Department, consisting of four floors of innumerable offices; on the south, or Edmund Street, front, and in the interior of the site, was the Gas Department; and on the west, or Congreve Street, front, including three floors, were the offices of the Health and Tramways Departments, both of which had already outgrown their new quarters since the extension of the city. On the first floor over the Gas Department were the new picture galleries, and on the second floor of Congreve Street the Natural History museums, both approached from the present Round Room over the new bridge across Edmund Street. The completion of the extension on the north side was now in hand, and would give further accommodation for the Tramways, Health, and Gas Departments, including, in addition, further picture galleries and museums for casts on the upper floors, with a special entrance devoted, as it were, to the Feeney galleries. Each of these departments was self-contained—each had its own main entrance and staircase, and at the same time there was easy access between the departments.

Internally, the finishings were of a very simple character—a little interest had been given to the entrance staircases and to the committee rooms, and one or two of the larger offices, but in the main they had to remember that the building was an office building. In addition to oak and maple batten and block floors, they had made extensive use of linoleum as a floor covering—particularly in the footways to the art galleries and in the panels in the corridors with marble surrounds. The walls and ceilings generally were plastered, and some of the rooms and staircases were panelled out in this material with certain parts enriched, while oak panelling had been adopted in the committee suites of the gas and education departments. The lower part of the gas department entrance hall and the dadoes to the main staircases to the other departments had marble linings, echelon bands, and alabaster fillings to the latter, and Hopton Wood

tone to the former. The principal staircases also had echelon treads, risers, and trings. The art galleries were lighted by day on what might be described as the ceiling light principle as against the lantern light. This system was not adopted until exhaustive enquiries and research had been made. Further, they would realise the lantern light presented considerable difficulties of construction, added to which they very much involved the problem of heating and ventilation. The heating of the building was by low-pressure hot water mechanically circulated—a very simple and trustworthy method. The ventilation was generally by the offices by means of extracts in the rooms, into ducts over the corridors, with cast shafts at intervals, finishing at the top with fan chambers. The art galleries had the glass of the ceiling lights slightly raised on fillets and extract fans in the tables exhaust from the roof spaces. The only downward ventilation was in the large gas office, where a large extract fan joined the base of the chimney stack, the foul air being forced up around the smoke flue from the boilers. Much interesting joinery was scattered throughout the work.

Mr. Whitworth Wallis proposed a vote of thanks to the architects for their paper, and spoke of the friendly relations which had existed between them and the Corporation officials. Referring to the bridge over Edmund Street he said the disciples of Ruskin were down on it, and all sorts of criticisms had been passed on that part of the structure. Personally, however, he did not care at all what the bridge was like outside, so long as it was beautiful within, and he could assure them that they had in it one of the most charming entrances to any art gallery he was acquainted with. As to the galleries themselves, they were beautifully lighted, well-proportioned, and free from bridecake ornament, which was nothing but a trap for dust, and distracted attention from the works of art on the walls. The motion having been carried with applause, Mr. Newman replied, and defended the bridge as supplying a stone connection between the old and the new buildings.

PICTURE EXHIBITIONS.

The Fine Art Society.
At this society's rooms is a collection of water-colour drawings of New Forest scenery, by Mr. Wilfrid Ball, whose work shows at its best in the small landscapes, which are admirable both in water-colour style and the true impression they give of the landscape of the beautiful country of the New Forest. For some reason, in the few drawings that are on a larger scale, the artist seems to lose in some degree the broad and clear style of the smaller landscapes. But the latter, which form the larger portion of the exhibition, are beautiful examples of landscape-painting in water-colour.

The '91 Art Club.
This club, which derives its name from the fact that it was started in 1891, holds exhibitions only for a few days each year, and was this year installed at the Pine Club Gallery from February 10th to March 4th. It appears to be entirely an exhibition of lady artists, and contains some good work. Among the paintings those of Miss Eleanor Ramsay, hon. secretary, are the most important;

her two large landscapes, "Rye" and "Drifting to the Dawn," are fine works; also a smaller one, "The Pathway to the Sea." Miss Frances Ramsay paints figures well, including a life-size portrait. Among other good contributors are Mrs. C. R. Walton, Miss Lota Bowen, whose landscapes have charm of colour as well as composition; and Miss E. M. Brebner has some good flower paintings. There are other good oil and water-colour pictures; also, it must be admitted, a good many that are not worth very much. The best things in the exhibition are some of the small works in bas-relief sculpture, by Miss Rope, a well-known sculptor, and Miss Lilian Edmonds, a clever painter who has only recently taken to sculpture; her "Virgin and Child" and "Cupid all Armed" are beautiful little designs in low relief. There are some cases of good jewellery work by Miss Riley, Miss Kinkead, Miss E. C. Woodward, and the Misses Frances and Violet Ramsay.

FIRE TESTS OF GLAZING AND REINFORCED CONCRETE DOORS.

The British Fire Prevention Committee's testing operations on Wednesday of last week comprised fire tests on a series of window openings glazed with "Copperlite" glazing, no panel of glazing exceeding 4 ft. super., and twelve panels being under test for varying periods of 60 minutes and 90 minutes, under the Committee's standards. "Copperlite" glazing had not been previously officially tested by the Committee, and the recording of its standard of fire resistance is thus of considerable technical interest.

There were further tests with two reinforced concrete doors made for the Committee for experimental purposes and submitted for the Committee's standard 2½ hours high temperature fire test. Here again work that had never before been under official examination was under observation.

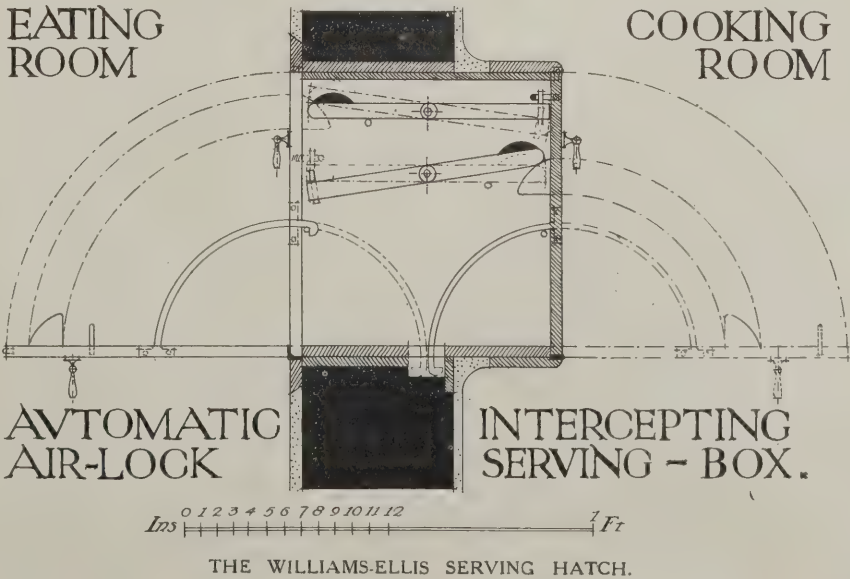
The results of the tests are not yet published. The Committee's Council was represented by Sir Henry Tanner, I.S.O., F.R.I.B.A., and Major A. McN. Cooper-Key (Ch. Insp. Explos. H.M. Office), and its Executive by Mr. Horace S. Folker, F.A.I. (Hon. Treasurer), and the Testing Sub-Committees comprised Messrs. Max Clarke, F.R.I.B.A., J. Herbert Dyer, R. W. Henderson, Bertram Chatterton,

A.M.Inst.C.E., C. T. Cuss, and J. W. Brooker, with Mr. Ellis Marsland as directing member. Among those attending were representatives from the Home Office, Office of Works, General Post Office, etc., etc., and also M. Welsch, late Chief Officer of the Ghent Fire Brigade.

A SERVING HATCH.

With the ordinary serving hatch between dining-room and kitchen, noise and smell from the latter may pass into the dining-room through the opening. To overcome this defect, several devices have been contrived. One of these comprises a sort of barrel with open sides, mounted vertically and fitted with shelves; with which arrangement the dishes are put in on the kitchen side by the cook, who then turns the barrel so as to bring the dishes round to the dining-room side, where the maid is waiting for them. Another device is shown by the illustration on this page. This is the invention of Mr. Clough Williams-Ellis, architect, of Arundel House, Victoria Embankment, W.C., who has obtained Provisional Protection for the gear. It has been fitted successfully in operation. One, we believe, is in the delightful little house in Reed Pond Walk, Romford, which has been built from the architect's designs, and was among those illustrated in our last Edition de Luxe. The greatest demand for such a device would seem to be in houses carried on with a staff of one to three servants; that is to say, in houses costing from £400 to £1,500. Mr. Clough Williams-Ellis is making arrangements for placing the gear on the market, when it will be obtainable for "a few shillings."

The action is a cam and lever one operated by two hinged hatches. Imagine the dining-room hatch to be open, as shown in the cross-section. Then the upper lever has its weighted end resting on a stop, the pin at the other end engaging a hook fixed on the inside of the kitchen hatch. Now imagine that the dining-room hatch is closed. Its cam will thus be brought into action, the weighted end of the top lever will be raised, and the kitchen hatch thus released. Thus one or other of the hatches may be opened separately, but not both at once, though both may be closed together; and in this way the passage of sound, draught, and smell from one room to the other is prevented.



ENQUIRIES ANSWERED.

Preparation of Damp Walls.

H. E. C. (London) writes:—"A house built in a very exposed position has walls constructed of 9 in. brickwork covered with 1 in. cement rough-cast. It is found that upon the south-west side water has penetrated after heavy rain from that quarter. Is there any preparation on the market which can be applied easily and inexpensively to the rough-cast to keep out the moisture? If so, must the walls be allowed to dry first?"

—There are several petrifying solutions or silicate paints on the market which should prove suitable. These are transparent, but there is probably no objection to the use on rough-cast of Duresco washable water paint (outside quality) after a previous coating with the petrifying liquid supplied by the makers of Duresco, who will furnish directions for use if so requested. The work should be dry before application of solution.

G.

Supporting a Stone Cupola.

SUBSCRIBER writes:—"It is necessary to construct a stone cupola as an addition to a building now in course of erection. The ground level is formed with concrete beds 12 in. thick, 2 ft. 3 in. wide, under 9 in. walls, and 4 ft. 3 in. wide under the front wall. The building is 25 ft. to the main cornice. It is intended to carry the cupola on two 10 in. by 6 in. R.S. joists resting on 18 in. by 4½ in. piers and walling with 8 in. by 6 in. joists resting on these, and the front wall placed alongside the 9 in. walls, all bolted together. Kindly say if the construction is satisfactory."

—The 9 in. walls with the 18 in. by 4½ in. pilasters are hardly sufficient to carry the weight of the superstructure, and it will be advisable to strengthen them by a 12 in. by 3½ in. by 26.1 lb. or a 10 in. by 3½ in. by 23.5 lb. channel steel run up the face of each pilaster, with angle cleat and plate on top to relieve the walls of part of the weight from the 10 in. by 5 in. joists. These channels should have proper bases and foundations. A grillage of rolled joists to carry the circular drum will enable a 4 in. by 3 in. rolled joist to be carried up from the centre to support the pineapple if a sufficient bearing for the joists can be obtained on the walls, and this will relieve the structure of the weight of the corbelling.

HENRY ADAMS.

Acquisition of Land under Finance Act, 1910.

D. S. writes: "Kindly say whether public bodies can acquire land at the price assessed by the valuers under the Finance Act, 1910, or any other Act."

—Public bodies can acquire land compulsorily under various Acts of Parliament specially passed for that purpose. They are all of a strictly limited character, and all require that the price should be settled by arbitration, if the parties cannot agree. There is no such general provision in the Finance Act, 1910, or its present amendments.

F.S.I.

St. Botolph's, Bishopsgate.

POST WREN (Cornwall) writes: "Kindly give some information about the church of St. Botolph, Bishopsgate, London. Do any published works give an account of it? The church, I believe, is the only known work in Later Renaissance by an architect named John Gold."

—The present church of St. Botolph, Bishopsgate, was erected between 1725 and 1729 at a cost of over £10,400, the old church having been demolished because of its ruinous condition. James (not John) Gold is stated to have been the architect, but the available information concerning him is very meagre. All the authorities we have consulted simply state that Gold was reputedly the architect, and that confirmatory evidence is very scarce.

St. Botolph's is a spacious, though not lofty, building, having two aisles, which are separated from the main body by composite columns. The steeple is placed at the east end, and consequently the chancel is situated beneath the tower. The ceiling is arched, and embellished with ornamental panels. In 1820 a lantern was introduced in the centre for the provision of additional light in the body of the church. There are galleries at the north, the south, and the west. Externally the church is of red brick with stone dressings, the steeple being wholly of stone. A fairly comprehensive account of the building is given in A. E. Daniell's "London City Churches," published by Constable and Co.

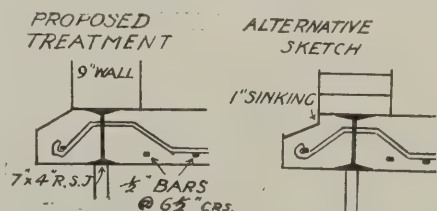
Silicate Solution for Exposed Chimney-Breast.

A. K. (Purley) writes: "Please advise as to whether it is feasible to utilise soda silicate (water-glass), or a combination of that and other substances, for the treatment of a chimney-breast built, in an exposed position, of Sussex dark stocks, which it is not desired to cover with cement or roughcast, the defect being that the heavy rains drive through it." (J. K. G. also asks a similar question.)

It is certainly practicable to use silicate solution for the purpose mentioned. One of the prepared petrifying paints will probably prove suitable, such as Szerelmey's silicate paint, or Blundell's. The work should be thoroughly dry before application, and more than one coat may be necessary. Messrs. Blundell, Spence and Co., of Hull, issue a useful guide to the use of petrifying liquids. All these solutions, though transparent, tend to deaden the appearance of the work after application.

Reinforced Concrete String Course.

T. M. writes:—"I enclose a sketch showing details of a store building. The string course is entirely broken away from the floor by the 7 in. by 4 in. R.S. joist that carries the 9 in. wall, and acts as a tie between the stanchions. This string course is used as a reinforced concrete beam between the brick piers, and is held in the lateral direction by three ¾ in. cross-bars from floor through web of 7 in. by



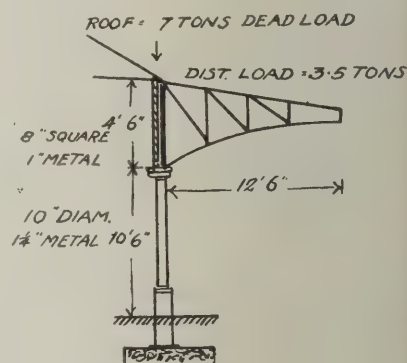
4 in. joist, and which are twisted round the longitudinal ½ in. rod running between the piers. It is thought that this forms a poor detail, and that the string course will shrink away from the joist and the rain will penetrate the joint between the brickwork and string course, and get

between the string course and the joist. I should be glad of your opinion."

—The detail has defects inseparable from mixed forms of construction. If the rest of the structure were of reinforced concrete the defect feared would not be likely to arise. If the 7 in. by 4 in. steel joist must be retained in its present position, liability for wet to penetrate the joint between brickwork and string course will be reduced if a 1 in. sinking is made above the external weathering (see alternative sketch), as in this case that particular joint will be no more liable to admit wet than any other of the horizontal brick joints. But why not omit the 7 in. by 4 in. joists, and build reinforced brickwork between the piers, the hoop iron in the joints making the 9 in. walls self-supporting and tying the piers by being carried through them? G.

Stress on Column.

QUAN writes:—"What assumptions should be made, and what is the maximum tensile stress on a column loaded as sketch?"



—The information supplied is insufficient to determine the full stress on the column. The length to the change of diameter should have been given, the centre distance between the columns and the area of surface of side and roof exposed to the wind. Taking the eaves of roof as a fulcrum, the stresses due to the given load are

$$\frac{W}{A} \pm \frac{M}{Z} = \frac{7+3.5}{34.36} \pm \frac{3.5 \times 6 \times 12}{67.13}$$

= 3.375 ± 4.05 tons per sq. in. compression, and 3.45 tons per sq. in. tension. As the safe working stress is not more than 1.75 tons per sq. in., the column is not strong enough, even without making any allowance for wind.

HENRY ADAMS.

Dispute Between Architect and Contractor.

G.S.W.L. writes:—"A firm of contractors was engaged to erect a building, the architect being appointed sole arbitrator. The bill of quantities did not form part of the contract, although there was a clause in the specification stating that the contractors should supply the architect with a copy of their priced bill of quantities, and that such prices should be the schedule of prices for any extra or omitted works upon which the architect should decide. The contractors exceeded the agreed time for completion, refused to remedy alleged defects, and presented the architect with a bill, whereas the architect's statement of accounts showed that an amount was due from them to his client. The contractors say that the contract was a lump-sum contract, and that no deductions of any kind

can be made from it. Please advise with regard to this matter."

—The following facts appear to be evident:—(1) That the quantities are not part of the contract, and therefore it is a lump-sum contract, and only omissions of the work originally contemplated and additions to that work can be taken into consideration. If the original quantities for the work executed were full, the contractor must be allowed to reap the benefit; if they were insufficient, he must stand the loss. (2) That although the time for the completion of the work was exceeded, and complaint made of the fact, there does not appear to have been any enquiry into the matter by the architect, nor any judgment by him at the time as to the responsibility for the delay. As mentioned in regard to a previous enquiry (*vide* "Architects' and Builders' Journal," January 17th, page 66) it seems to be necessary, before the expiry of the contract period for completion, for the architect to enquire into the question of time, and to grant allowance of time where the contractor is entitled to it, or the penalty clause fails. (3) Although the architect was appointed sole arbitrator, should his own conduct be called into question the court will usually set him aside, and refer the matter to an independent arbitrator. (*Freeman and Sons v. Chester R.D.C.*). (4) That the client has a counter-claim for non-delivery, which may be valid against either the contractor or the architect, or both, according to where the fault lies, unless the client himself has contributed to the delay by own acts.

A. G. W.

Timber Roof Truss.

TIMBER writes:—"I enclose tracings [not reproduced] showing diagrams of a proposed wooden roof truss for a public hall. Kindly advise with respect to the construction."

—The designs submitted are typical of a class of imperfect truss for which no stress diagram can be made until other members are added. The structure proposed is altogether too flimsy, even for a temporary structure in a sheltered situation. A public hall 45 ft. wide, with ground floor and first floor to be used for dancing, and having a high-pitched open-timber tiled roof, needs substantial walls or very efficient bracing, and the design must be worked out on a very different basis before it is worth while to spend time in criticising it.

HENRY ADAMS.

Competitions for Students.

J. W. B. (Oldham) writes:—"I am anxious either to sit for an examination or to compete for any prize that may be offered by such institutions as at South Kensington, etc. The R.I.B.A. and S.A. exams. (final) are too advanced for me. Can anything be got for preparing a set of drawings for some given subject?"

—The South Kensington exams and prizes are practically confined to pupils at recognised art or technical schools. Two valuable prizes open to all members of the architectural profession are periodically awarded by the Architectural Association. They are: the Banister Fletcher Bursary, value 25 guineas, given for a selection of measured drawings and descriptive report of the buildings illustrated (annual), and the Saxon Snell Scholarship, value £50, awarded triennially in rotation by the A.A., the R.I.B.A., and the R.San.Inst. for subjects connected with the improvement of hospital design. This usually takes

the form of a design and report for some building such as a cottage hospital or a convalescent home. Particulars may be obtained from the Association Brown Book. The R.I.B.A. prizes and student-ships are open to all British subjects, but are presumably too advanced. G.

Responsibility for Defective Tiles.

Z. writes:—"A tile submitted by a builder has been approved by the architect. After the tiles have been laid, it is found that they are absorbent, and must be replaced. Who is to bear the loss?"

—Possibly the amount of the loss could be recovered from the vendor of goods that have been found to be unsuitable for the purpose for which they were supplied. It must not be overlooked, however, that the building owner is entitled to rely on the architect for protection in such matters, and that the architect having accepted the tiles, apparently the builder is free from legal responsibility as to the choice and its results, unless, indeed, it can be conclusively shown that he had some peculiar interest in introducing the goods. It seems, therefore, that the architect should do his utmost to get the matter settled without loss to the building owner. In order to secure rectification, it might be advisable to withhold payment for the work. This course would possibly stimulate the builder to seek indemnification from the vendor. Failing a satisfactory issue of private negotiations, the building owner might sue the vendor for the loss sustained. The particulars furnished by the querist, however, are too meagre to form the basis of a definite opinion. Failing a reasonable result of private conference, the case should be stated in full detail to a competent solicitor, who would then be in a position to offer sound advice as to the best course to pursue.

LEX.

Buildings to Measure near Teddington.

S. W. H. (TEDDINGTON) writes: "Kindly recommend a building somewhere in this neighbourhood, or in Surrey or Middlesex, suitable for the intermediate R.I.B.A. Testimonies of Study (old form)."

—Querist presumably desires work which can be measured for sheets 4 and 5 of the Testimonies. The district is not architecturally rich, the finest work being that near at hand at Hampton Court Palace, where, in the older parts, suitable details for one sheet may readily be found. Within cycling distance, there are, of course, many churches from which a window or other detail of the Early English or Decorated period might be taken. Banstead is one such; though externally modernised, the arcade would make a good subject in the interior. G.

Light Roofing Material for Flats.

A. H. (LONDON), writes: "A terrace of fifteen houses in London is roofed with zinc flats, which, after having been satisfactory for some thirty years, are now a great source of expense. Kindly suggest a fire-resisting material which it will not be necessary to cover with gravel and coke breeze in order to comply with the fire regulations of the L.C.C."

—Any of the numerous patent multi-ply roofing materials which have rubber and rubber substitutes as their form of waterproofing require to be covered for protection from risk of fire. This may be done either with $\frac{3}{4}$ in. sand topped by

$1\frac{1}{4}$ in. of fine gravel (to pass a $1\frac{1}{4}$ in. ring), or with 1 in. of concrete or tarpaving. Several firms, however, lay ordinary asphalt in two coats on felt laid on roof boarding, and this requires no such protection. G.

Conversion of Residential Property.

"SUBSCRIBER" desires to know whether in the changed circumstances of a neighbourhood, which make the conversion of what has hitherto been residential property into shop property the only alternative to letting it for apartment houses, the courts would be likely to grant an injunction in the event of the owner of an apartment house, relying upon an old covenant forbidding the houses to be used for business premises, seeking to restrain an adjoining owner from converting his property into a shop.

—The answer is in the affirmative; but seeing that other neighbouring owners are actually converting, it might be possible to arrange for the abrogation of the restrictive covenant by mutual consent, if the matter were tactfully handled.

A. G. W.

The "Fair Wear and Tear" Clause.

SUBSCRIBER (PORTSMOUTH) writes: "In an agreement for a three years' tenancy, the following clause occurs: 'And also (the tenant) will at all times during his occupation of the said premises, keep and maintain the same in good tenantable repair, and so deliver up the same at the end or sooner determination or the said term (fair wear and tear and damage by fire excepted). The points at issue are: (1) Does the fair wear and tear clause qualify the first part of the agreement, or exclusively the latter part only? (2) Would any sort of repair—decorative or constructional—necessitated or required by the tenant during his occupancy devolve upon him, or, under the fair and wear and tear clause, upon the landlord? (3) Does not the fair wear and tear clause apply exclusively to the condition of the house at the time of yielding up possession?"

—The intention of the maintenance clause quoted is that, whatever the condition of repair of the premises when taken over by the tenant, he shall maintain them in that condition by suitable repairs as and when required, and at the end of the tenancy shall hand over the premises in as good a condition of repair as that in which he received them, except in so far as that condition has suffered by reason of fair wear and tear, due to the legitimate usage of the premises for the purposes specified in the conditions of tenancy. In answer to the specific questions: (1) The words "fair wear and tear," etc., qualify the "good tenantable repair," otherwise an owner who let a tenant a new house would be entitled to require back from him a new house at the end of the tenancy; (2) the tenant has to do all repairs required during his tenancy. Sometimes this is mitigated by a provision in the agreement excluding repairs of a structural character, such as arise when dry rot affects the stability of wooden floors; (3) the fair wear and tear clause comes into operation whenever a comparison has to be drawn between the state of repair of the premises when taken over by the tenant, and the state of their repair on any later occasion, if the owner claims that the tenant had not fulfilled, or is not fulfilling, his covenant to "keep and maintain in good tenantable repair."

A. G. W.

LONDON MASTER BUILDERS'
ASSOCIATION.

The fortieth annual general meeting of the London Master Builders' Association was held in the Council Chamber, Koh-i-Noor House, Kingsway, W.C., at 4 p.m., on February 29th. The President (Mr. G. Bird Godson) at first occupied the chair, which was afterwards taken by Mr. James S. Holliday, the newly appointed President.

The minutes of the last annual general meeting, the subtended annual report of the Council, and the audited accounts for the year ending December 31st, 1911, were read and approved.

The following officers and members to fill up rota vacancies on the Executive Council were elected for the coming year:—President, Mr. James S. Holliday (Messrs. Holliday and Greenwood, Ltd.); Senior Vice-President, Mr. Walter Lawrence, jun. (Messrs. Walter Lawrence and Son); Junior Vice-President, Mr. W. F. Wallis, J.P. (Messrs. G. E. Wallis and Sons, Ltd.); Treasurer, Mr. Edmond J. Hill (Messrs. Higgs and Hill, Ltd.); Council: Messrs. C. E. Allen (Messrs. Allen and Co., Pimlico), F. J. Gayer (Messrs. E. A. Roome and Co.), R. J. Holliday (Messrs. Holliday and Greenwood, Ltd.), F. M. May (Messrs. Holland and Hannen and Cubitts, Ltd.), F. G. Minter, W. J. Renshaw, Howell J. Williams, J.P., L.C.C. (Messrs. H. J. Williams, Ltd.), Hy. Wall (Messrs. Chas. Wall, Ltd.), Walter Wood (Messrs. F. and F. J. Wood). Honorary Auditor, Mr. E. S. Blake (Messrs. W. E. Blake, Ltd.).

A hearty vote of thanks was given to Mr. G. Bird Godson for the able and assiduous manner in which he had discharged the duties of President during the past year.

The Trades Disputes Act (1906) was considered, and the meeting desired unanimously to lodge a petition against the said Act in the House of Commons.

Instructions were given to secure the signatures of all the members of the association, and they are earnestly requested to sign.—THOS. COSTIGAN, Secretary.

The annual report, presented and adopted at the above-recorded meeting, includes the following items:—

State of the Building Trade.—During the past year there has been an improvement in the building trade, but the abnormally keen competition which prevails renders it difficult to carry on business on anything like profitable lines.

Matters affecting Contracts.—The Institute of Builders formulated amendments to Clauses 20 and 28 of the Agreed Contract, together with a new form of contract for sub-contractors. These proposals were laid before this Association and were approved. Further steps in the matter are now being taken.

Organisation.—This matter has received earnest attention during the past year, and, as a result, many important firms have become members. The London Association of Master Decorators has become affiliated to this Association.

Parliamentary.—The National Insurance Bill has been carefully considered in co-operation with other bodies. The Council is glad to recognise that public attention is being drawn to the gross abuse of the Trades Disputes Act (1906), and they are associating themselves with other bodies in pressing upon the Government some action to put an end to the abuses existing under the Act. Careful attention has been given to several other

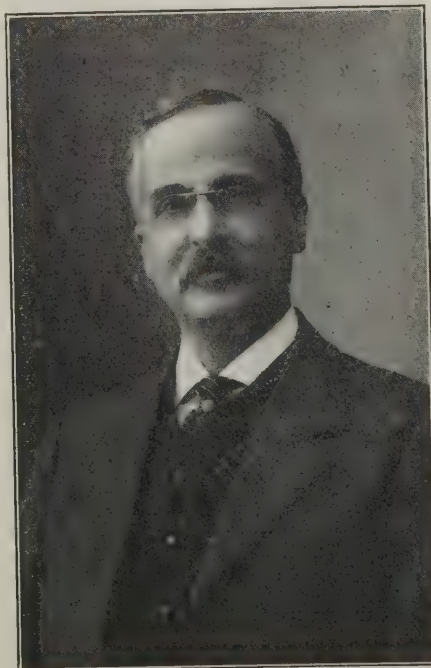
Bills before, or to be brought before, Parliament, and they have been referred to the Employers' Parliamentary Council.

Lead Poisoning.—Mr. F. G. Rice was appointed representative of this Association on the Home Office Departmental Committee appointed to consider matters relating to the dangers arising from the use of lead in painting, to collect evidence, and to report thereon. The Committee appointed has held many protracted meetings, and the building trade is under great obligations to Mr. Rice for the interest, attention, and ability which he has devoted to the subject.

Legal Cases.—The case of C. P. Roberts v. Hickman and Co. was carefully considered. The case was finally taken to the House of Lords, where judgment was given in favour of the builder. A condensed report of the proceedings is given at page 122 of the I.M.B.A. Handbook.

Relations with the Workmen.—The labourers applied for the formulation of a working rule agreement, but the Council could not consent to the proposal. The Council declined to consider any application for an increase of wages to smiths and hammermen, as there was no working rule agreement between their societies and this Association. Six months' notice of the termination, on June 8th, 1912, of the working rule agreement with the Amalgamated Society of Carpenters and Joiners was received. A copy of a new working rule agreement was also received, but the Council of this association could not accept it as it was proposed and signed jointly by the Amalgamated Society of Carpenters and Joiners and by the Furnishing and Cabinet Makers' Societies, the latter not being a recognised branch of the building trade.

Work of the Council.—Amongst other matters the Council have given careful attention to the following:—(1) Suggestions from the Quantity Surveyors' Association as to items to be embodied in all Primary Bills of Quantities. (2) A movement on the part of organised workmen to obtain permission to use the Labour Exchanges for other purposes than those for which they were intended.



MR. JAMES S. HOLLIDAY,
The newly elected President of the London
Master Builders' Association.

YORKSHIRE FEDERATION OF BUILD-
ING TRADES EMPLOYERS.

The monthly meeting of the Executive Council of this Federation was held in the Council Chambers, Town Hall, Hull, on February 15th, when 67 delegates were present from the federated associations.

The Deputy-Mayor (Ald. H. Feldman, J.P.), in the absence of the Mayor through illness, extended a welcome to the Federation.

The President called the attention of members to the death of the late Alderman Judge, of Wakefield, on January 24th. The Federation was represented at the funeral.

It was reported that protests had been received from 16 towns, containing 556 signatures, against the undue haste in which the National Insurance Act had been rushed through Parliament against the definite promise of the Chancellor of the Exchequer. It was resolved to bring the matter before the National Administrative Committee with a view to National action being taken, and to request the other Federations to associate themselves with the protest. The local associations were desired to make an earnest endeavour to complete the returns not later than March 14th.

It was resolved to submit the name of the president to the National Health Insurance Commission as an eminently qualified person for appointment on the advisory committee to be appointed by the National Health Insurance Committee.

The recommendation of the Northern Centre that the three constituent federations should continue the payment of subscription to the National Federation on the commuted basis was considered, and the Federation approved of the subscription to the National Federation being assessed for the present year at a certain sum that was specified.

The President reported upon the proceedings at the annual meetings of the National Federation held in London in January last.

Mr. Sinclair reported that the question of non-union labour as raised in connection with the Leeds case was heard by the National Conciliation Board on February 1st. After the parties had presented their case, and the Leeds witnesses retired, the matter was adjourned, as the question is also raised on the notices for alteration of rules which come up for consideration at the annual meeting of the Board in May.

Mr. W. R. Thompson reported that at the invitation of the Town Clerk of Huddersfield a deputation of the Federation, consisting of himself, Mr. T. E. Taylor (Bradford), and the Federation Secretary, had waited upon the Town Clerk on February 13th, to lay before him reasons in favour of the application of the Federation for the insertion of an independent arbitration clause in the contract form of the Huddersfield Corporation. The deputation had a pleasant interview with the Town Clerk and City Surveyor, and after a frank interchange of opinions, the Town Clerk promised that the views of the Federation would be laid before the Committee of the Corporation having the matter in hand.

The revised draft of the West Riding County Council was referred to as including the words, "but it shall not be a condition that trades union men only shall be employed." The copy of the revised clause as circulated after the last meeting is therefore confirmed.

It was decided to urge the National Administrative Committee to request the President of the Local Government Board to receive a deputation with respect to official action being taken whereby local authorities should not only be urged to impose standard conditions for the protection of honourable employers and competent workmen, but also to observe standard conditions in respect of contracts between such authorities and federated employers.

The receipt of the revised conditions of contract issued by the West Riding County Council was reported. The conditions were referred to the Emergency Committee for consideration and report.

Mr. Hollingworth, on behalf of the Huddersfield Association, invited the Federation to hold the next meeting in that town, and the date was fixed for March 21st.

The annual dinner of the Federation was afterwards held in the City Restaurant, Hull, when 180 members and friends were present, Mr. J. Townsley, president, presiding.—Condensed from report by J. DAVIDSON, Secretary.

TRADE AND CRAFT.

"The Charm of a Panelled Room."

Under this title Messrs. Higgs and Hill, Ltd., Crown Works, South Lambeth Road, London, S.W., have issued an elegant booklet emphasising by description and illustration "the distinctiveness and refinement of good oak panelling." The rooms illustrated have been executed by Messrs. Higgs and Hill to the designs of leading architects; and it is rightly insisted that "in important work an architect should be consulted, whose knowledge and taste enable him to adapt the style of his design to suit the requirements of the building and its furniture." The firm make a speciality of panelling, their shops being equipped with the most modern machinery and facilities for turning out high-grade work at an extremely low price; while the joiners engaged are first-rate craftsmen of expert skill and experience in this class of work. The firm also keep large stocks of oak, which is stored on their extensive works, which cover an area of three and a half acres, until it is thoroughly seasoned. Moreover, the wood is selected with the utmost care so as to secure not only durability and freedom from blemish, but the most attractive figuring. The booklet includes fully illustrated sections on garden stonework and ornament, and on refinement, taste, and economy in decorative work. The name of the firm being closely associated in the public mind with constructional work, the booklet under notice will do good service in calling attention to their completely equipped decorative and other departments, which include all kinds of stonework, joiners' work, plaster work, sanitary work, and electric lighting.

Artistic Electric Fittings.

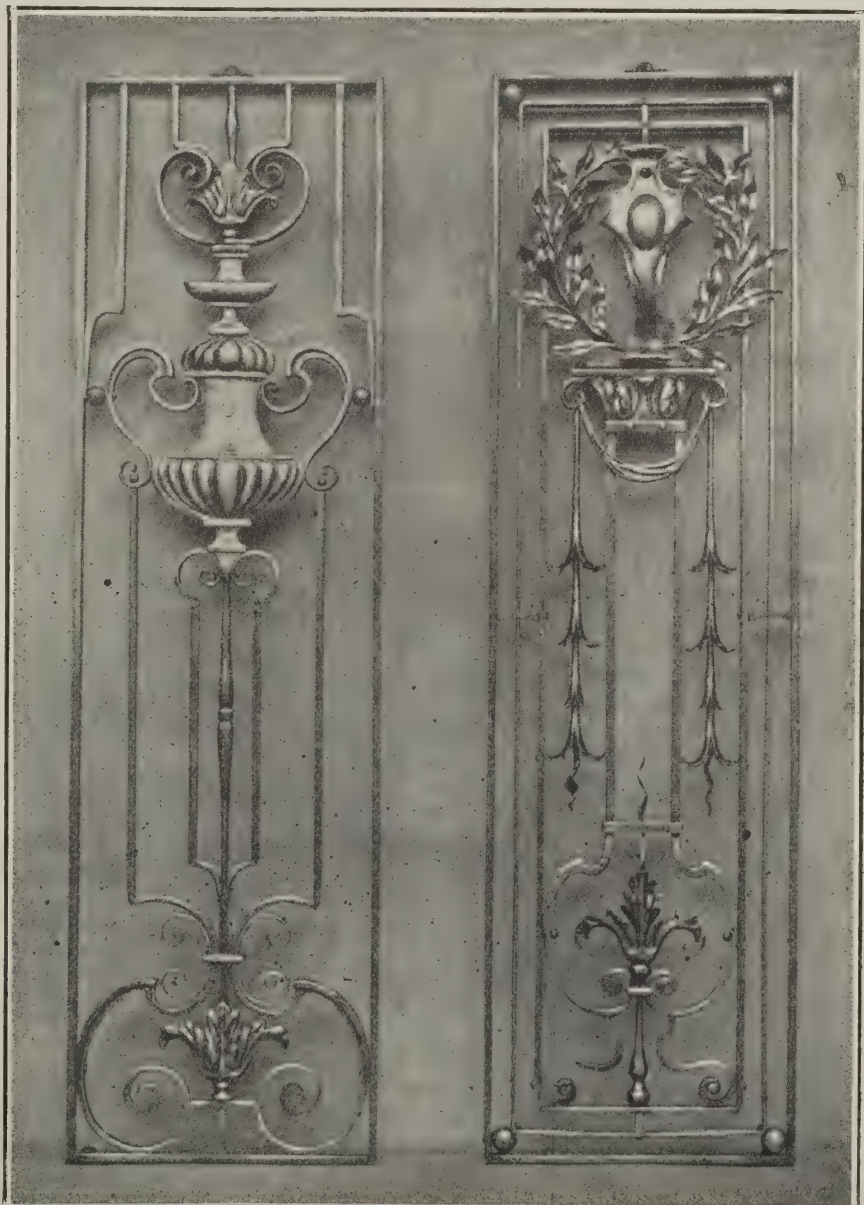
Messrs. F. and C. Osler, makers of electric fittings, whose show rooms are at 100, Oxford Street, London, W., and works at 250, Broad Street, Birmingham, have produced an exceedingly fine album in which their designs for various forms of fittings are illustrated by actual photographs, which probably represent the best possible method of showing the exact appearance of the objects. The designs thus shown are without exception artistic in the highest degree, the lanterns,

standards, candelabra, and other forms, having been modelled in accordance with the best traditions of form, proportion, and pattern. The album offers a somewhat embarrassing choice of chaste designs, adaptable to all conditions of lighting and to many idiosyncrasies of taste, ranging from severe simplicity to elaborate decoration. They are, however, without exception charming, each in its own degree and after its own kind, and architects arranging for such fittings should certainly consult this unique album of photographs.

Ferro-Glass for Floor, Roof, and Pavement Lights.

A new system (Keppler's patent) of constructing pavements, roofs (straight and circular), floors, stallboards, partitions, etc., is described and copiously illustrated in a booklet that has been issued by Messrs. J. A. King and Co., of Bridge House, 181, Queen Victoria Street, E.C., who are sole concessionaires for this method of construction. The many advantages claimed for the system may be shortly summarised. In "Ferro-Glass" construction, the maximum degree of translucency is secured. The material surrounding the cement ribs is glass, and is translucent. The

glass being specially constructed, most of the light falling on the plates from below is diverted by total reflection, so that the cement joints remain invisible. Similarly a large number of rays of light falling on the plates from without are no longer lost, but penetrate into the interior of the space to be illuminated, and serve the purpose of lighting it. There is no iron framework to be kept painted or suffer from rust, the steel reinforcing rods being, of course, surrounded with cement. The system is therefore of special advantage in hospitals, or where the atmosphere is charged with acid or other corroding agents. The steel parts which carry the structure, being surrounded by glass and concrete, offer superior resistance to the influences of fire, and, being unaffected by changes of temperature, are not subject to the contraction and expansion which, in the case of unprotected frames, may cause the glass to crack or scale. Tests have proved that the new lights have a bearing capacity of more than sufficient resisting strength for any kind of roof, floor, or pavement light construction. In roof construction under this system, the translucent prisms lie in the same plane as the roof, and do not form any corners or angles in which



WROUGHT-IRON GRILLES (ARMOUR-BRIGHT FINISH) MADE BY
F. AND C. OSLER, LTD.

snow and rain-water could collect and become the cause of leakages; while the roof is strong enough to bear any weight which is likely to be imposed upon it, such as that of a man employed to clean it or to remove snow. In this form of construction the glass prisms and steel reinforcing rods are laid on temporary shuttering at the building, and the joints filled by pouring in the concrete; or the prisms can be assembled at the factory and despatched ready for placing in position. The glasses (which are easily renewable) are made in several colours, and with diamond, prismatic, or smooth underside, and plans can be laid out for any kind of opening.

A list of important buildings at which "Ferro-Glass" construction has been used includes the Houses of Parliament, Somerset House, the Kodak building in Kingsway, H.M. Office of Works, Whiteley's new premises (London, W.), the Sutton Trust Model Dwellings, and many others.

Messrs. Thos. Parsons and Sons' *"Dreadnought."*

At Montgomery's Building Exhibition, which is being held at Rusholme, near Manchester, March 9th to 23rd, Messrs. Thos. Parsons and Sons, varnish and japan manufacturers, 8, Endell Street, Long Acre, London, W.C., have re-erected their interesting and attractive "Dreadnought" stand, as shown at the Building Trades Exhibition at Olympia last year, and more recently at the Crystal Palace at Sydenham. The stand, it will be remembered, represents as accurately as possible the fore part of a modern battleship, with barbette, armoured bulkhead, conning tower, bridge-deck, upper bridge, chart-house, and guns, all complete. The "Dreadnought" is finished in the firm's white "Endelline"; while within the reception-room at the back of the bulkhead are panels showing "Endelline" in various colours, as well as the companion enamel "Endelflat," and samples of "Lacrite," the "Opako" lead-free undercoating, and a few examples of "Trans-ol" friezes, which, as the name suggests, are transfers executed in oil-colour. The stand has not been re-enamelled since it left the hands of Messrs. Trollope, Son, and Colls, who did the painting rather more than a year ago, and it has therefore received only six coats from the bare wood—namely, one coat priming, three of "Opako," one of undercoating "Endelline," and one of finishing "Endelline." Three pantechnicons and two trucks were required to transport the "Dreadnought" from the Crystal Palace to Manchester, and in these circumstances the freshness and brilliancy of the surface are remarkable evidences of the durability of these paints under extraordinarily exacting conditions.

LEGAL.

Builders' Van in Collision: Unfortunate Appeal.

In the Clerkenwell County Court, before his Honour Judge Cluer, an action was brought by George Hammond, chauffeur, of South Kensington, against Francis Charles Ball, builder, of Archway Road, Highgate, for £100, as damages for personal injuries sustained. Mr. A. J. David, K.C., with whom was Mr. Fenton, was counsel for the plaintiff, and Dr. C. Herbert-Smith was counsel for the defendant. This was a new trial. The action first came before his Honour Judge Howland Roberts and a jury on January

8th last, when the jury found in favour of the plaintiff, and judgment was entered for agreed damages, £70. On a subsequent application to the Court by defendant, his Honour set aside the jury's verdict on the ground that it was against the weight of evidence, and another jury was empanelled for a new trial. The action arose out of a collision which occurred on the Uxbridge Road on July 19th last. Plaintiff, who was driving a motor car towards Uxbridge, was passing two coal carts proceeding in the same direction. Coming in the opposite direction were a cart and van belonging to the defendant. Plaintiff said there was plenty of room for him to pass between the two lots of vehicles, but as defendant's van came near to the motor car he noticed the driver jump forward towards the reins, which were hanging loosely. It was alleged that the horse swerved into the motor car and plaintiff was struck in the ribs by a shaft of the van, the shaft penetrating his two coats. He was lifted into the air and dropped into the back of the motor car. Plaintiff was afterwards taken to the Hayes Cottage Hospital, and remained as an in-patient for one month. As a result of the injuries sustained in the accident he was incapacitated for nearly sixteen weeks, and had not yet entirely regained his health.—The jury returned a verdict in favour of plaintiff, and awarded £85 damages. Judgment was entered accordingly, with costs of both trials.

SOCIETIES AND INSTITUTIONS.

YORK AND YORKSHIRE ARCHITECTURAL SOCIETY.

William Etty, R.A., 1787-1849.

On February 28th, before the above society, Mr. A. B. Burleigh, Lic.R.I.B.A., in the chair, Mr. G. W. Milburn, of York, read a paper on the life and work of William Etty, R.A., 1787-1849.

In this lovely old city of York, he said, with its memories and associations, the mind is led backward two thousand years, linking together the early Britons, Romans, Danes, Saxons, Normans, with the citizens of to-day. Landmarks, fine buildings, and written records of men and manners, have been left to us. Illustrious characters, such as Agricola, Hadrian, Constantine, St. Paulinus, St. Wilfrid, and Alcuin for learning; whilst for art the names of Flaxman and Etty stand out conspicuously.

Imagine York without its William Etty, whose name and beautiful pictures are known and appreciated by every lover of choice and artistic work! His fine style of flesh-painting is unsurpassed; and his noble conceptions are of the highest order of merit, and not unworthy, the author thought, to rank with the greatest masters of antiquity.

The son of a York miller, Etty in his youth became a working printer on a newspaper. Etty was 34 years of age when Napoleon died (1821), and the death of such a mighty military genius would appeal to a sensitive nature like Etty's, and in all probability the outcome of his thoughts was the picture of "The Combat" or "Mercy Pleading for the Vanquished." This ranked as the noblest of Etty's productions, and was one of the finest historical paintings that the English school had yet produced.

From his youth he always aspired to be an artist. After serving his apprenticeship as printer on the "Hull Packet," he went to London, to stay with his

uncle; and later was a student at the Royal Academy schools—eventually under Sir Thomas Lawrence.

He thought long in preparation for his pictures, but executed them quickly. He succeeded John Flaxman as R.A. in 1828. He would generally spend the first and second evenings in making a charcoal outline; then go over the sketch with ordinary pen and ink, and then commence to paint. The York School of Design was founded by Etty (it was one of the first provincial schools—1842). It commenced in the Hospitium in St. Mary's Abbey ground, York. He died at York in his 63rd year.

At the conclusion of the paper, a hearty vote of thanks was proposed by Mr. John Windass, F.S.A.M., and seconded by Mr. Harold E. Henderson, Lic.R.I.B.A.

ARCHITECTURAL ASSOCIATION OF IRELAND.

At a general meeting of the above society held in the lecture hall, 15, South Frederick Lane, the president, Mr. Page L. Dickenson, M.R.I.A.I., in the chair, Mr. Conor O'Brien read a paper entitled, "The Development of a National Style of Gothic Architecture in Ireland," which was illustrated by numerous photographs and lantern views of the principal ecclesiastical buildings erected in Ireland between the twelfth and fourteenth centuries. Mr. Conor O'Brien found a precedent for the development of a national Gothic style in the work done in Ireland during the thirteenth and fourteenth centuries, when great originality of design and independence of treatment were shown by the Irish builders. The lecturer also called attention to the excellent carving and workmanship to be found in many of the tombs and memorials to the dead in Irish abbeys.

In proposing a vote of thanks to the lecturer, Mr. R. M. Butler, M.R.I.A.I., suggested as an explanation of the great difference in detail and treatment often to be found in buildings of the same period in Ireland, that many of these buildings owed their erection to the English colonists, and so, naturally, differ in their details and mouldings from those built by the Irish people.

GLASGOW INSTITUTE OF ARCHITECTS.

At the annual general meeting of the Glasgow Institute of Architects, Mr. C. J. MacLean, the secretary of the Institute, submitted the 44th annual report of the Council. This stated among other matters, that the ninth triennial competition for the Alexander Thomson Memorial Studentship was held in February, the subject being a design for a bridge with approaches. The number of competitors was disappointing, only three sets of drawings having been received. The studentship, value £60, was awarded to Mr. James Bennett, Ayr, but in view of the small number of competitors, and the fact that the quality of the work was not up to the standard which the trustees desired, they decided not to award the second prize in this competition.

During the past year the Council had been actively engaged in formulating the scheme for the better regulation of competitions which has now been adopted by the Institute, and in terms of the new Articles of Association the following resolution had been passed:—

"Any Fellow or Associate Member shall be considered to have been guilty of professional misconduct in terms of the Memorandum and Articles of Association."

Association of the Institute, and shall be liable to the penalties therein stated, if it be found by the Council either (I.) that he has knowingly submitted, directly or indirectly, a design in any competition which has previously been the subject of a notice by the Council or by the Committee on Public Architecture and Competitions, prohibiting members of the Institute from taking part in the same; or (II.) that he has knowingly solicited the promoters for permission to submit a design in a limited competition after the list has been closed."

The scheme, which was put before the Institute after long and careful consideration by the Council, is similar to that of the Royal Institute, by which it has been approved. A similar course of action has been adopted by several of the Allied Societies in their respective districts, and the Council is in communication with all those in Scotland toward securing similar procedure on their part where not already in force. The Council hopes under the powers now granted to it to be able to deal more effectively with the apparently increasing number of unsatisfactory competitions.

The president (Mr. J. B. Wilson, F.R.I.B.A.), in moving the adoption of the annual report, referred to the recently instituted licentiate section of the Royal Institute of British Architects. He was pleased to say that the response from their province had been very gratifying, and that from what he personally saw during his term upon the Royal Institute Council, not only in numbers had the Glasgow province been equal to any section of the Kingdom, but in quality also. It was pleasant to know, too, that the Town Council proposed to encourage or assist a Town Planning Exhibition and Conference in Glasgow. The exhibition could be but a shadow of what it might have been had they accepted the offer made them last year, as the bulk of the best drawings were not now available; but it was something to know that at last they recognised that town planning had interests beyond those merely of architects and builders, and that it concerned the municipality and the public most of all. The Corporation having seen the error of their ways in relation to this matter, they might hope for better and saner procedure in other civic matters with which, as architects, they were closely concerned, and in which they had recently ventured respectfully to enter their protest. He referred, of course, to the large and rapidly increasing amount of municipal building work emanating from the City Engineer's Office. At present the Art Galleries, the rebuilding of the historic Tontine, and the extension of the Municipal Buildings—work all calling for high architectural skill—was being, and proposed to be designed and controlled from an "Engineers' Department."

A HAMPSHIRE ASSOCIATION OF ARCHITECTS.

At a meeting of representative Hampshire architects held at Bar-Gate Chambers, Southampton, on March 2nd, Mr. R. F. Chisholm, F.R.I.B.A., presiding, it was decided to form a Hampshire Association of Architects on the lines of those affiliated to the R.I.B.A. Draft rules were considered and passed, as were also declarations to be signed by members, associates, and associated craftsmen, the subscriptions being 10s. for members and 5s. for others.

Sir William Portal, Bart., F.S.A., was elected president; Mr. N. C. H. Nisbett, A.R.I.B.A., proposed by Mr. W. Wheeler, vice-president and chairman of committee; and Mr. R. M. Lucas was elected hon. secretary and treasurer, with Mr. Ingalt

Sanders assisting. Communications from those desiring to join the association should be addressed to Mr. R. Macdonald Lucas, F.R.I.B.A., Bar-Gate Chambers, Southampton.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

On Saturday evening last, at the Royal Court Theatre, Sloane Square, W., an admirable performance of Mr. Bernard Shaw's comedy "You Never Can Tell" was given by that well-known amateur society "The Strolling Players." There was an excellent "house"—due very largely to the efforts of a committee of ladies who worked energetically in the sale of tickets—and we hope that the result will be a substantial donation to the funds of an excellent institution. The object of the Builders' Clerks' Benevolent Institution, it may be explained, is to give relief and to grant pensions to decayed clerks who have been engaged in the building trade of London, and to their widows. This is an object worthy of the support of all connected with building, and we commend it to the attention of our readers. Subscriptions may be sent to Mr. Dudley Bartlett, of Messrs. Perry and Co., Ltd., builders and contractors, Tredegar Works, Bow, E., who at the present time is president of the Institution, and was largely instrumental in organising the performance so successfully carried out at the Court Theatre on Saturday last.

LEGAL.

The Question of Contractual Referees.

In the Court of Appeal, before Lords Justices Vaughan Williams, Farwell, and Kennedy, the Corporation of Bristol appealed from an order in Chambers affirming the order of Master Macdonell, refusing to stay the action of John Aird and Co. against the corporation to recover £171,215 for work done and for damages for breach of contract with respect to dock works at Avonmouth. The contractors claimed £1,927,977, but had been paid £1,753,000, and were seeking to recover the balance. The corporation contended that the matters in dispute should be referred to the arbitrator named in the contract. The Court refused to stay the action.

Vacuum Cleaning: Important Judgment in the House of Lords.

In the House of Lords the judgment has been upheld of the Court of Appeal (which had affirmed the judgment of his lordship Mr. Justice Neville) in the case of the British Vacuum Cleaner Co., Ltd., v. the London and South Western Railway Company. The action was brought to restrain the user of a plant supplied by another company to the railway company; and the gist of the House of Lords judgment is that the British Vacuum Cleaner Co., Ltd., have succeeded in establishing the validity of their Booth's patent (No. 17,433), and that, consequently, an injunction, damages, and costs have been awarded against the London and South Western Railway Company for infringement by use of another plant. It is important to note that the British Vacuum Cleaner Co., Ltd., have instructed their solicitors to take immediate proceedings against any person using any plant which infringes the patent of which the validity has now been finally established in the House of Lords.

IN PARLIAMENT.

(By our Press Gallery Representative.)

The Science and Art Buildings, Dublin.

In the House of Commons, Sir Edward Carson asked the Chief Secretary for Ireland whether it was intended to proceed further with the completion of the original design of the new science and art buildings in Dublin and to erect a façade and entrance from Upper Merion Street; and, if so, why all work on the site had been suspended.

Mr. Masterman, Secretary to the Treasury, who replied, said that work had been stopped in consequence of the completion of the new Royal College of Science buildings. The completion of the original scheme for the erection of new public offices had been deferred in view of the possibility of changes in the requirements of Government departments in Ireland.

Green Park and King Edward Memorial.

Colonel Burn asked for an explanation of the laying down in grass of the recently made gravel walk through the Green Park from Piccadilly to the Mall.

Mr. Wedgwood Benn replied that the walk was being laid down in order to improve the vista from Piccadilly of the Queen Victoria Memorial, accommodation for pedestrians being provided by the construction of two footpaths in the avenues on either side of the Broad Walk. No charge fell upon public funds in respect of this work. He afterwards stated that the work was charged to the Queen Victoria Memorial Fund.

Mr. Lee wished to know whether the change had anything to do with the proposed site for the King Edward Memorial, but Mr. Benn could not answer the question without notice.

Captain Murray wished to know whether any site for the King Edward Memorial other than that at the Piccadilly end of the Broad Walk had recently been under the consideration of the Memorial Committee. Mr. Guest, replying for the First Commissioner of Works, said the answer was in the affirmative. Several sites had been under the consideration of the Committee.

Inspection of Lifts.

Mr. Hildred Carlile asked the Home Secretary whether any regulations were in existence for the inspection of lifts on business premises and in offices; whether the regulations under the Factory and Workshops Act relating to lifts applied also to those premises and in offices; whether he was aware that such regulations were in operation in other countries; and whether, if there were no such regulations, he proposed to take any steps to safeguard the public using such lifts?

Mr. McKenna, in reply, said: There are not, so far as I am aware, any statutory regulations in force in this country in regard to the safety of lifts in offices, nor do they come under the inspection of my Department. I am informed that in some foreign countries regulations on the subject are in operation. Office premises are outside the provisions of the Factory Act, and I am afraid I have no power to take any action in regard to them.

In reply to a further question he promised to take the matter into consideration, but he could not promise legislation this session.

Fair Wage Resolution.

Mr. Keir Hardie has signified his intention when the House goes into Committee of Supply on the Navy Estimates, to call attention to the administration of the Fair Wages Clause, and move a resolution.

COMPETITIONS.

R.I.B.A. Prizes and Studentships, 1913.

The subjects set for the above include the following:—Soane Medallion, A Terminal Railway Station; Tite Prize, The Façade of a Royal Palace in a City; Grissell Prize, A Riding School; Henry Saxon Snell Prize, A Sanatorium for Consumptives. Full particulars are given in the booklet just issued by the Institute (9, Conduit Street, W.), price 3d.

Warrington Competition (Oakwood Avenue Council School), and Blackwood Hall Competition.

With reference to each of these competitions, the secretary of the R.I.B.A. has, by order of the Council, issued the following notice: "Members and Licentiates of the Royal Institute of British Architects must not take part in the above competitions, because the conditions are not in accordance with the published regulations of the Royal Institute for architectural competitions."

Murton Housing Competition.

Mr. J. J. Dobson, of Rodridge, South Wingate, is the successful architect in the competition promoted by the Easington Rural District Council for plans of three types suitable for miners' dwellings at Murton. 129 architects competed. The designs submitted were exhibited at the Council Offices, Easington, from October 25th to January 27th last, during which period the Council met from time to time and considered in detail (with the aid of Mr. William Milburn, architect, of Sunderland, acting as assessor) the merits of the designs. It was not until after this exhaustive consideration, extending over eleven weeks, that the Council finally decided in favour of Mr. Dobson, "whose plans conformed most nearly to the conditions of the competition and to the requirements of miners' dwellings." The estimated cost of the three types is £150, £165, and £200, respectively. The architect is required to undertake the whole of the work in connection with the carrying out of the scheme, and to have an office on the ground, and he will receive 2½ per cent. on the actual cost of the work!

NEWS ITEMS.

Change of Address.

Mr. H. Ascough Chapman, F.R.I.B.A., Architect, has moved from Leeds to Cantelupe Road, Bexhill-on-Sea.

Partnership.

Messrs. E. A. Roome and Co., builders and contractors, of 36, Basinghall Street, E.C., have taken into partnership their manager, Mr. F. J. Gayer. The title of the firm will remain as before.

Old Birmingham.

The offices of the Birmingham Canals and Navigation, at the corner of Broad Street and Suffolk Street, are to be demolished shortly, to make way for some new business premises.

Buttresses for Winchester Cathedral.

In response to a wish expressed by a number of Wykehamists, arrangements have been made with the Dean and Chapter of Winchester that one of the new buttresses on the south side of the cathedral shall be the gift of Wykehamists and those connected with the College, and shall be named the Win-

chester College Buttress. The buttresses are all required largely in order to preserve Wykeham's magnificent work in the nave; and the buttress selected is one of the two on which the Shrine of the Founder in some measure rests.

Condition of the Galilee Chapel at Durham Cathedral.

The condition of this chapel, which is at the west end of the nave, and is probably the most beautiful example of Transitional Norman architecture existing in England, is stated to be unsafe.

The King of Italy and the British School at Rome.

Dr. Ashby, the Director of the British School at Rome, has been received in audience by the King of Italy, to whom he presented an album containing forty facsimiles of drawings of Roman scenes, by British artists, from the print room of the British Museum. The dates of the drawings ranged from 1715 to 1843.

Old Town Hall, Manchester.

The Manchester City Council approved last week the action of the Parks Committee in agreeing to the proposal to remove and re-erect in Platt Fields the colonnade and wings of the old Town Hall in King Street. The Committee propose to make a request to Lloyd's Bank, who have bought the old building and its site, to present to the Corporation the stonework, comprising the colonnade and wings, containing statuary.

Internal Decoration of His Majesty's Theatre, Manchester.

Messrs. John Tanner and Son, of 45, Horseferry Road, London, S.W., and Liverpool, have been entrusted with the whole of the fibrous plasterwork and decorations for the new His Majesty's Theatre, Manchester, the architects of which are Messrs. Horace Farquharson and Richardson and Gill. A perspective view of the interior was published in our issue for December 27th last.

Art Museums and Picture Galleries.

Mr. Edwin T. Hall, F.R.I.B.A., will read a paper on "Art Museums and Picture Galleries" at the general meeting of the Royal Institute of British Architects fixed for April 1st. The illustrations will include a fine collection of slides specially prepared for the paper. Mr. Hall's paper is in substitution for that on "Modern Methods of Construction," which Mr. Dunn is unable to read.

The London County Hall.

The King, accompanied by the Queen, Princess Mary, and the Prince of Wales, laid, on Saturday last, the foundation-stone of the new County Hall for London. A silver trowel, specially made by students of the Council's Central School of Arts and Crafts, was handed to His Majesty by Mr. Ralph Knott, the architect. Afterwards the King conferred the honour of knighthood on Mr. Edward White (Chairman of the Council) and Mr. Maurice Fitzmaurice, the Council's chief engineer.

The New Adelphi Hotel, Liverpool.

This new hotel, part of the rebuilding scheme of the old Adelphi, is to be opened on March 26th. It is claimed to be "one of the finest, if not actually the finest, in Europe." The grand ballroom, the French restaurant, and other spacious apartments are designed on a scale of

unusual magnificence, while the Hypostyle Hall, opening on to beautiful gardens, will be a revelation of what can be accomplished both architecturally and decoratively. About 1,000 workmen are constantly engaged on the building, and the work is being rapidly pushed forward towards completion. Members of the Liverpool Architectural Society recently paid a visit of inspection, when they were shown over the building by the architect, Mr. R. Frank Atkinson, F.R.I.B.A.

The A B C Railway Guide.

The March issue of the "A B C Railway Guide" shows a further enlargement and is reset in new type. The Guide gives train information for every station in Great Britain, with distances and fares to every station where there are through bookings, and the positions of the stations are shown on the revised maps by reference numbers. The Guide contains over two thousand names of the principal hotels and boarding establishments in England, Scotland, and Wales.

Fire-resistance of Reinforced Concrete.

A fire test on a large scale has occurred at the Blabon Oil Cloth Works in Philadelphia. A four-storey concrete building with wired glass skylight was used as a drying plant for long strips of linoleum, which hung down from iron bars at the top. There were no floors in the building, which was practically a shell. The linoleum caught fire and burned up, but the building was uninjured, although the fire is reported to have lasted several hours.

A Trade Proposal.

The well-known joinery works of Messrs. Samuel Elliott and Sons, Ltd., of Caversham, Reading, have been carried on for the last three or four months by a receiver and manager, and we understand that the large staff of skilled workmen have been working overtime in order to cope with the orders in hand. We are requested by the Receiver to state that he is prepared to enter into negotiations for the amalgamation or purchase of the concern, and could probably arrange to finance a considerable portion of the purchase price. Enquiries should be addressed to the Receiver, Mr. Sydney W. Tubbs, F.C.A., 28, Basinghall Street, E.C.

The Law Union and Rock Building.

On Saturday last, Mr. Howell J. Williams, the contractor for this building (which is now being completed on a site next to the Records Office in Chancery Lane, London, W.C.), gave his men who had been mainly responsible for the interior fittings an opportunity of seeing the finished work in its place. Mr. Williams, in a short address, said he considered it was a happy thought that suggested this idea, and he regretted that it had never struck him before, but hoped he would have many similar opportunities in future. Mr. Williams mentioned that he himself had once worked at the bench, and had had to start at six o'clock in the morning. The young craftsmen and artisans of the present day who wanted to rise, he said, must take an intense interest in their work, as he did; and he recommended them to make the fullest possible use of the abundant facilities for technical education which were now available. Mr. Williams mentioned that a quantity of eighteenth-century brickwork, found on the site, had been incorporated in the new building.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
N. ARCH 20th, 1912.

Volume XXXV.

No. 896.



ENTRANCE TO ZOOLOGY BUILDING. MUSEUM OF NATURAL
HISTORY, PARIS. JULES ANDRÉ, ARCHITECT.



SELECTED DESIGN FOR THE MUNICIPAL OFFICE BUILDING, NEW YORK. McKIM, MEAD AND WHITE, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

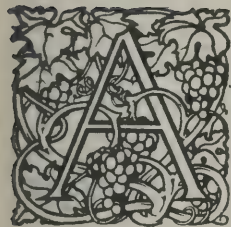
MARCH 20th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 896.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Cheap Cottages.



CORRESPONDENT of the "Spectator," who we gather to be a large owner of landed property, raises a new point with regard to the possibility of providing cheaper cottages on country estates than can be furnished by the means and materials in general use. He bases his letter on the fact that the Board of Agriculture

has appointed a Departmental Committee "to enquire into the nature and character of buildings which should be provided for use in connexion with small agricultural holdings in England, with special consideration as to the possibility of the reduction of cost, by the use of materials and methods of construction different from those ordinarily employed at present."

As the correspondent in question, Mr. H. B. M. Buchanan, says (and we entirely agree with him), the enquiry is a most important one, since in providing small holdings the great point is to avoid all unnecessary expense in building operations. And Mr. Buchanan's main suggestion is that wooden buildings should be more largely used. That out-buildings should be built of wood, on brick foundations, is of course easily agreed to; his suggestion is that we should turn our attention more to the possibilities of wood structure for dwelling houses. He mentions, naturally, the extensive use of wood dwellings, what are called in America "frame houses," in the country districts of the United States and Canada. These have formed a special department of American house-building; but our impression is that, whether for good reasons or not, they are rather beginning to fall into disfavour. It is certain that we hear much less about them now than we formerly did.

The kind of cottages recommended is one of which the exterior of the walls is formed of boarding tarred or creosoted from time to time, with strong angle posts of hard wood, all on a brick foundation; this outer face being backed (we presume that is what is intended) with a certain thickness of lath and plaster; but the precise method of lining them is not very distinctly specified. That such cottages could be built very cheaply is obvious enough. The social importance of the subject lies in the consideration that in order to keep people on the land it is necessary to have houses ready for them. When labourers once drift into the cities, they do not come back. On Mr. Buchanan's own estate there are, he says, more than the average number of cottages; "yet when any of the young men wish to marry they will have to leave the estate and seek work elsewhere, probably in the towns, because I shall have no vacant cottages to offer them"; and the conclusion we suppose is that he cannot afford to build more by the ordinary methods.

Thus the question of cheap cottages touches the very existence of agricultural life. Can we regard the method suggested as a practical and satisfactory one? We feel somewhat doubtful about it. The editor of the "Spectator" blesses the scheme entirely, and states that on an estate of his own, in a very exposed situation, the winter rains penetrated through hollow brick walls; through ordinary

brick walls covered with rough-cast; through walls of cement blocks partially hollow; and that the tarred boarded cottages were the only ones that kept the wet out. We should have liked to inspect these various buildings before forming an opinion; it is a good deal a question of how the brick walls were built, especially the hollow ones, and of what kind were the cement blocks. We cannot quite take the editor of a political and literary paper as an expert on building. He says that the idea that wooden houses are not fit for human habitation in this climate "is the greatest of delusions." Our experience does not bear that out quite. The wooden cottages of the kind he describes may have kept rain out, but will they keep frost out? The writer of these words has twice stayed in old-fashioned half-timber farmhouses (let as holiday lodgings) during frost, and did not enjoy it. His experience was that the temperature inside was very nearly as low as that outside; in the morning it was like getting up in the open air.

That the danger from fire in a country district, where buildings are not packed up to one another as they are in towns, is almost negligible, we agree. Such houses would be all plaster inside, and plaster is a very good fire-resisting substance. We heard only a few days ago of a remarkable instance of this, in the case of an early nineteenth-century church, the arcade of which, with the spandrel surface above it, was formed of plaster mouldings and wall-surface on a timber framing. The church was burnt, and in the course of the conflagration the fire penetrated from above the arcade into the timber backing, which was all burnt away, but the plaster shell was left nearly uninjured, standing by its own adhesive power. So that we do not think the danger of fire need be much regarded. But that these wooden and lath-and-plaster walls will be efficient protection from the cold of a hard frost we do not believe.

The question of appearance, though no doubt a secondary matter in such a case, counts for something. One can hardly imagine anything less inviting in appearance than black tarred wood cottages, nor is the smell of tar or creosote, which must be renewed from time to time, very agreeable. If the object of building cottages is to keep the labourers on the land, it is important to consider whether they will be willing to live through the winters in wood and plaster cottages. We should rather doubt it.

The editor of the "Spectator" does not say whether he tried hollow walls with rough-cast facing; as we read it, the rough-cast was only applied in the case of the solid brick walls. Rough-cast and hollow walls combined might have done the business in keeping out the rain, though we are not very much in favour of hollow walls; one never knows what may be accumulating in hollow spaces that can never be inspected.

No mention has been made in the correspondence of concrete, which might be a more efficient way of providing cheap cottages than that suggested—at least, in neighbourhoods where the materials for concrete are within easy reach. It depends a good deal upon that. Concrete is cheaper than brickwork where the materials for it are at hand, but not otherwise.

The wooden cottage suggestion may be worth consideration and experiment; but for the reasons above given we rather doubt of its success.

Mr. Ralph Knott and the London County Hall.

WE publish on this page a new portrait of Mr. Ralph Knott, the architect of the London County Hall. He is one of the young men of ability who have been discovered through the open competition system, and though only 33 years of age is now engaged on the largest building in course of erection in this country. Mr. Knott was educated at the City of London School. At the age of 17 he became articled to Messrs. Woodd and Ainslie, architects, of Westminster, with whom he stayed three years. He subsequently entered the offices of Sir Aston Webb, and it was when there that he gained the London County Hall competition. This, however, was not his only competition success, for he had previously been placed second for the Bristol Central Library, and had gained a similar place in the competition for the new library at Malvern.

The mallet, plumb-rule, and level illustrated on the opposite page were used in connection with the laying of the foundation-stone of the London County Hall by His Majesty the King on March 9th. These were made by the Bromsgrove Guild, who also executed the bronze casket in which the coins and documents deposited in the foundation-stone were placed.

For the accompanying plan we are indebted to "The Surveying and Housing World."

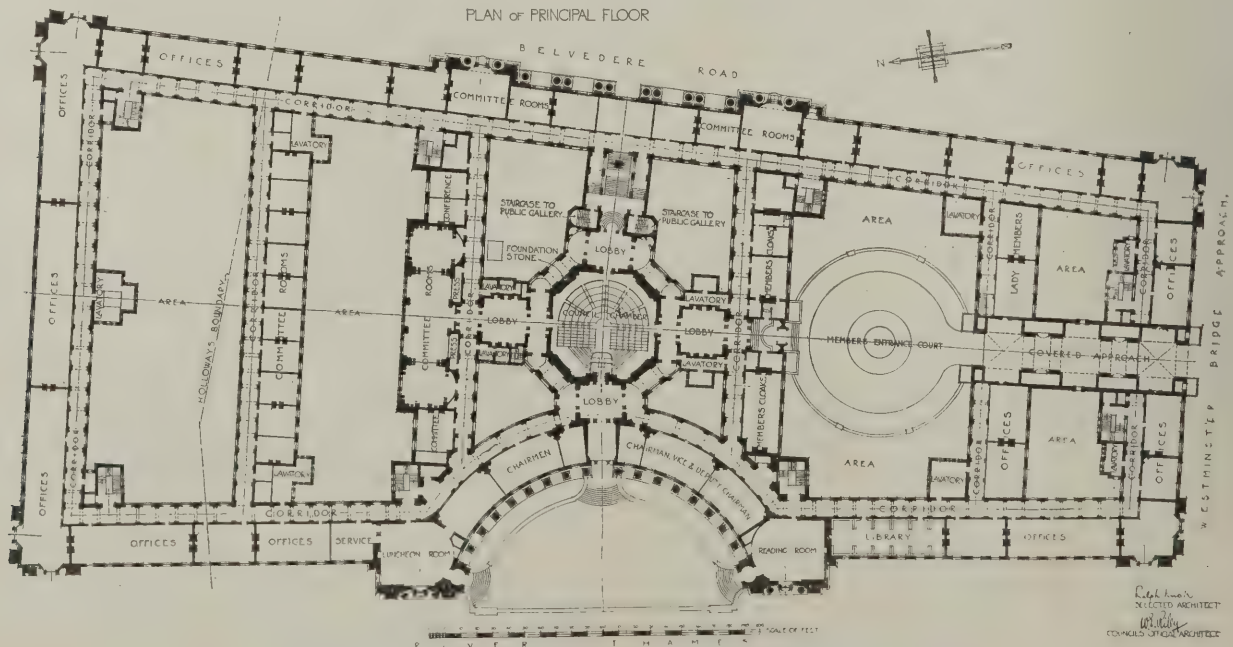
London Street Name-Plates.

THE method or want of method in the display of the names of streets in London has long been a discredit to us. The Institute of Architects have taken the matter up, and have invited a conference of representatives of the various borough councils to consider the subject; and we believe that this invitation has in most cases been responded to in a friendly spirit. It appears to us that there are three main points for consideration in connection with this subject. The first is, the necessity of having the naming universal, at the corners of all streets. At present this has been most capriciously done; there are numbers of streets in London in which one can find no name till after going some distance along the street. Such carelessness is absurd, and is the occasion of serious public inconvenience. In Paris, the names are at every street corner, and there is no reason why they should not be so in London, except that of indifference and neglect on the part of borough authorities. The second requirement should be uniformity in design and lettering. At present the name-boards are of all kinds of material and design; a fact which does not speak of a well-governed city. And when we say uniformity, we mean uniformity over the whole of London. Some of



MR. RALPH KNOTT. Photo: Hoppé.

the borough authorities seem possessed with the idea that each borough should have its own distinctive name-plate, to be used within its own jurisdiction. The obvious objection to this, which will occur at once, is that in some cases the borough boundary runs down the centre of a street, and then the two name-plates would differ on opposite sides of the street. But independently of that objection, it is far better for appearance and convenience that all London streets should be named and lettered in the same manner; there is no sense or advantage whatever in having so many different designs of name-plates in the different



THE LONDON COUNTY HALL: PLAN OF PRINCIPAL FLOOR.

boroughs of London, especially as in that case they will certainly not be all equally good. Let the best possible one be selected, and be introduced for the whole of London. The desire of borough authorities to have their own special lettering is a kind of vestryman's policy, narrow-minded and egotistical. Thirdly, we want to see a really well-designed but perfectly legible lettering, in a form and material that will be durable; and of course it must not be too costly in either material or method of construction. No doubt specimens will be produced and discussed at the proposed conference. Probably the best material, for combining economy with appearance, would be cast-iron plates with the lettering in relief; in that case the lettering can always be painted up by an ordinary painter, without requiring the employment of skilled labour. Letters flush with the general surface of the plate, in whatever material, are apt to get soon dulled in a smoky atmosphere.

Greek Sculpture.

IN the paper on "Greek Sculpture" which he read before the Royal Society of Arts last week Professor Ernest A. Gardner dealt with the conditions in which the Greek sculptor worked and attained to such extraordinary excellence. To enable these to be realised, he first discussed at length the very different conditions in which we view the examples of the art that have come down to us. The disadvantage of seeing these examples out of their natural setting cannot be overcome. If the Elgin marbles, for example, were restored to Greece they would still, he said, be shown in a museum in Athens. To replace them even in a reconstructed Parthenon would expose them to damage from weather, and the protection of such monuments is above all imperative. So also, in respect of restoration, the negative rule as surely holds; and not only must we be content with imperfect statues, but we must also remember that originally they were coloured. And, finally, in judging Greek sculpture, it is necessary to distinguish between originals and copies, and in particular to differentiate between Greek copies and those of Roman date. Having thus shown the main calls upon our imagination if we are to see their sculpture as the Greeks saw it, Professor Gardner rapidly sketched the conditions in which the Greek sculptor worked, and the marvellous freedom and renewal of impulse which he enjoyed within the convention of a few limited types. In this part of the lecture especially he was greatly aided by the excellent illustrative photographs thrown upon the screen.

Bell-Frames in Church Towers.

THERE has been a discussion going on in a Cambridge paper as to the merits of the modern iron frames for hanging church bells, as against the old wooden frames. The Secretary of the Society for the Protection of Ancient Buildings has been upholding the wooden bell-frames of the old type, but in doing so he is, we think, rather acting against the protection of ancient buildings. There is plenty of evidence that the more scientifically constructed modern iron bell-frames are more efficient in keeping strain off the tower walls than the old and often badly constructed timber frames; and the Vicar of Longstanton, who from his letter is evidently an expert in bell-ringing, asserts from his own experience that the bells can be rung more easily and with less effort in the modern frames. The only objection that we can see to the iron frames is that the fact of being hung in iron instead of in wood may to some extent affect the tone of the bells, not for the better. This is, of course, denied by the iron-frame advocates, but we should think it must make a difference, though perhaps not so marked as to be detected by those who were not on the look-out for it.

The Architect and the Public.

THAT entertaining writer "The Londoner" in the London "Evening News" has delivered the retort courteous to the architect who, in a recent paper at the Institute of Sanitary Engineers, was engaged in the time-honoured assault on the Public for its ignorance of architecture. In this matter the professional man is usually talking to his professional brethren, who, naturally, are ready to back him up against a common object of taunt. No harm is done, because the object itself is almost sure never to hear of the diatribes, and, even if in some instances it does, has rarely the capacity to reply effectively. But there are two sides to all things, and we feel grateful to "The Londoner" for coming on so merrily. The lecturer in question appears to have inferred that artists and musicians have all the luck, that everybody knows their names, and they are part of every talker's stock-in-trade. Yet, said he, nine people out of ten did not know who designed the Houses of Parliament, the Roman Catholic Cathedral at Westminster, St. George's Hall or Liverpool Cathedral, Waterloo Bridge or the Bank of England, not even the Banqueting Hall in Whitehall. The answer to that statement we must leave to the incisive writer. He says: "No doubt it is all



PLUMB-RULE, LEVEL, AND Mallet USED IN LAYING THE FOUNDATION-STONE OF THE LONDON COUNTY HALL.

very true. Or, let me say, there is a deal of truth in it, in any indictment for wilful ignorance which you may draw upon against the Public. Take us in the lump, we are an ignorant lot. Indeed, I am disposed to think that this architect, for all his harsh words, is very subtly flattering us. Let me, as one of this miserable Public, cheer myself up by putting the same case the other way round. Never mind about the nine out of ten; take the one which remains after subtracting the nine. Is it indeed possible that one in ten of us, that a hundred out of a thousand of us, know all about Sir Charles Barry's work at Westminster, and how he came to make Gothic designs so curiously in the manner of young Mr. Pugin? Is it true that one in ten of us has the story of Sir John Soane by heart, an affectionate memory of Sir John Rennie and Byzantine Bentley, with a lively appreciation of that wonderful young man Mr. G. G. Scott? If so, the Public should be reasonably proud of its average intelligence. As one of it, I am in the mood to charge back on our critics. Can the Architects themselves, not to speak of the Sanitary Engineers, show such a fair level of liberal knowledge? Are ten in a hundred F.R.I.B.A.'s and A.R.I.B.A.'s sound in the Elizabethan dramatists: will at least one out of ten sanitary engineers write me down a dozen lines of Kubla Khan or Herrick's song to the daffodils without material error? The truth is that we all, even the Sanitary Engineers and the Architects, have our fair share of ignorance. . . . All things being considered, the architect has no good reason for complaining. It is true that the fame which is publicity or notoriety helps the poor fellow to a meagre portion. Yet he has it among his fellows. They know who had the cathedral job and who was chosen to build the town hall, and, as I suppose, they crown the victor with laurel and rejoice with him in Institutes, giving him praise and blessing. If so, the Architect should be well content. . . . But should he, even though his ignorance of Kubla Khan be complete? We think that what the lecturer had in mind was, that the architect did not receive the tribute which is due to him when he creates a very notable addition to a city's buildings. The foundation-stone ceremony generally furnishes an

excellent example of this, for it is then customary to record the presence of every official, to set out the details of a hundred trivial matters, while not making a single reference to the architect whose ability has created the whole design. He may not be a seeker after publicity, but he should at least get his proper share of recognition.

Passing Crazes in Domestic Architecture.

ONE needs to be well on guard against some craze that are sweeping through English domestic architecture, more especially as they have been adopted by certain designers of ability. One of these is the craze for small low rooms. This is part of the notion that if we can only live like the old cottager did, we shall be well on the way to gain "simplicity" in a world of extravagance. And so we have the rather pitiful spectacle of an ordinary commonplace Briton sitting, rather forlorn, in a low room with exposed beams, and only wanting the dangling hams to prevent his standing up straight. All of which arises from the mistaken notion of applying seventeenth and eighteenth-century surroundings of an agricultural character to a modern man who has very little in common with the country. The same thing is often seen in the case of windows. So entranced has the sketcher become with the honeysuckle-entwined lattice of the country cottage or the small farmhouse that he rushes to repeat it in his modern creation, but probably his house is in quite alien surroundings, sunlight and air being shut off by streets of neighbouring houses; and even if it were not so, and the conditions were the same, there would be the difference between a burly countryman living the whole day in the outside air and a pale city dweller of sedentary habits. Another craze gives us the brickwork fireplace. In some great room, with plain tables and walls, sturdy and rough in keeping, such a fireplace is delightful; but when we put it in a room where nothing else is similar, it becomes ludicrous. We are asked to suppose that it is quite proper, and admirable, after sitting at the Sheraton table with finely cut glass and all the appointments of cultured elegance, to forgo round this crude piece of brickwork, whereon maybe, are set delicate silver candlesticks and choice examples of china. The whole thing is incongruous, and the sooner we have done with it the better. If we would have the brick fireplace, we had better forswear our trap-pings and live up to it, in corduroys, with a rough table and platters—and no such things as books bound in soft leather! It is all the art of make-believe, in a very polite way. The garden city has furnished us with plenty of examples, both inside and out. And, referring to the outside, we recall the attempts at living the simple life in a garden plot a dozen yards square, with green smocks and ever the delight of the artistic coterie; and as the evening sun sinks we, sitting in the oak porch (6 ft. by 3 ft.), may imagine we are gazing at the everlasting hills instead of a similar creation to our own on the other side of a 20-ft. road.

A Mistake of £1,000 in Tendering.

AT last week's meeting of the Bangor Guardians a curious mistake was reported. The Chairman stated that at the previous meeting the tender of the Todmorden contractor had been accepted for the erection of the new workhouse infirmary at Bangor. After the contract was told that his tender was accepted he was asked for information in order to enable the Guardians to fill in a form required by the Local Government Board. He now informed the Guardians that when searching for the particulars he discovered that a clerk in his employ had made a mistake of £1,000 in his tender, and he forwarded the paper showing how the error occurred. It appeared that the mistake took place in adding up the total sum. A long discussion occurred as to whether the contractor should be invited to tender again, and it was eventually decided to invite him, with all the others who had tendered, to re-tender, which was undoubtedly the best way out of the difficulty.



FOOT OF STAIRCASE, CHÂTEAU DE CHANTILLY.
THE LATE H. DAUMET, ARCHITECT.

THE S.A.D.G.

IN France the letters S.A.D.G. are as familiar to architects as the letters R.I.B.A. are to the profession in this country, as they stand for that influential body, the Société des Architectes Diplômés par le Gouvernement. Last year the Society registered its thousandth member, and celebrated the occasion by the publication of a fine volume of about 60 plates, illustrating the work of its leading representatives, a copy of which publication was presented to the Royal Institute of British Architects, and is now to be seen in the Library at 9, Conduit Street, W. Five of the plates are here reproduced to a small scale. They are, perhaps, as good as any others in the volume, though this includes a certain number of examples that possess little merit—in fact, the domestic designs generally are of an extremely poor character, strangely in contrast with the good taste shown in the civic work. But, taking the collection as a whole, it is a most admirable one, testifying to the worth of modern French architecture. While looking through it one may imagine what would be the collective value of a similar publication illustrating buildings by living members of the R.I.B.A. Without doubt there would be individual examples of great merit, but the general level of the work would certainly be far lower than that shown in this volume of the S.A.D.G.

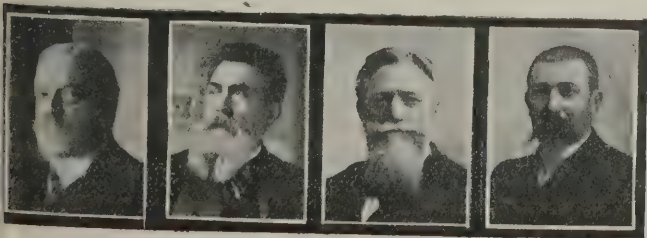
In connection with the accompanying illustrations some account of the Society may be given.

First let it be stated that the Diploma, the distinctive mark and stamp of a qualified architect, was long sought. In 1843 the Central Society of French Architects endeavoured to ascertain what measures could be demanded from the Government to remedy the defect of anyone being able to call himself an architect and to practise as such. Three years later, in 1846, a commission declared for a compulsory diploma. The Government of Louis Philippe made several proposals with this object in view, but before anything definite was sanctioned the administration collapsed. In 1863 a decree for the reorganisation of the Ecole des Beaux-Arts was issued, and at the same time the protest of the Central Society of French Architects was taken up again, with the result that four years afterwards, on November 27th, 1863, a ministerial resolution instituted the Diploma. Administrative difficulties, however, arose from the very beginning, and it was only through the foresight of M. Eugène Guillaume, then Director of the Ecole des Beaux-Arts, that the Diploma was able to take a definite form. "Having to control the Architectural Section," writes M. Guillaume, "I did not experience much trouble in making the Administration understand that the instruction provided at the school was not to produce Prix de Rome, but architects; at the same time, before an architect commenced to practise it was necessary that he should have before him some proof to show that he had gone through a complete course of study. In brief, I asked that a new title should be instituted by the school, as an encouragement to work, as a guarantee of ability, and as an indemnification. This title was the Diploma." Such a title was granted, and then, in the early days of its existence, there began a fierce attack from without, by those who regarded the scheme as a mere school affair divorced from practice, and by those—Viollet-le-Duc among them—who were opposed to what they considered to be, not a professional guarantee, but the establishment of an official clique. However, the Diploma, though young, had plenty of vigorous supporters who did not fail to come forward,



MAIN ENTRANCE TO THE MUSEUM AT NIMES.
MAX RAPHEL, ARCHITECT.

and later a committee of influential members was formed to put forward the important request that holders of the Diploma should be employed for State works. There was no lack of opposition to this proposal also, but it was eventually carried. We now come to 1881. In that year the holders of the Diploma, numbering forty-four, assembled together for the purpose of considering the founding "of a society of purely friendly character, non-official, holding an annual dinner, electing a committee annually, and paying a fee of 5 francs per member." Such a society was then brought into being, and their first success, the appointment of one of their members, M. Jasson, as architect to the City of Nancy, was heralded with joy. This was certainly an advance, but the opposition to the Diploma still found voice, and trouble continued. However, matters improved little by little, and by the year 1890 it may be said that the Diploma was firmly established. From that time its progression has been steady, and to-day it is recognised as the highest mark of distinction in the profession. It is not obligatory, but furnishes evidence that holders of the Diploma have had a regular training in the Ecole des Beaux-Arts, and are to that degree qualified architects. Portraits of four leading members of the Society are here reproduced. M. Pascal, now in his seventy-fifth year, is the *doyen* of French architects, and has many fine buildings to his credit, including the additions to the National Library, Paris, the Faculty of Medicine and Chemistry at Bordeaux, and monuments to Regnault, Michelet, and Victor Hugo. M. Nenot was the architect of the new Sorbonne, M. Ch. Girault of the Petit Palais, and M. Laloux of the Gare d'Orléans, Paris.



H. Nenot,

V. Laloux.

J. L. Pascal,

Ch. Girault.

THE DAWN OF THE
FRENCH RENAISSANCE.*

BY W. H. WARD, M.A. CANTAB., A.R.I.B.A.

NO country outside of Italy made the teaching of the Renaissance in architecture so thoroughly her own as France. In Italy this attempt to express contemporary requirements in a language of forms and proportions inspired by the study of ancient monuments was a native growth, a reversion to national methods temporarily disturbed by foreign importations. The causes which led to so ready and complete an acceptance of it in France, which had a native architecture of an altogether different character, form too wide a subject to be discussed now, if time is to be left for a survey of its consequences.

In the fifteenth century, France rose from the anarchy and disorganisation of the Hundred Years' War to a new era of prosperity and consciousness of national life under the rule of a strong monarchy. This state of affairs found expression in the last or Flamboyant phase of her Gothic architecture, characterised by extravagant but graceful exuberances, immense technical dexterity, and excessive naturalism in sculpture. The bulk of the buildings of the time showed an intricacy of decoration and restlessness of line hitherto unreached. But signs were not lacking here and there of a striving after those ideals which everywhere

accompanied the Renaissance—the change from the striving and aspiring, the vertical and the mysterious in architecture, to repose, horizontality, and clarity. The elaborate tracery of the screens at Albi shows a return to the semicircular arch, and the courtyard of the house of Jacques Cœur at Bourges displays a tendency to horizontal treatment and regularity of setting out, though both works are wholly Gothic in detail. The way was thus being imperceptibly prepared for the great change to come. Definitely Classical detail first made its appearance in certain monuments carried out by Italians about 1480, under the auspices of the House of Anjou, which was closely connected with Italy—a chapel in the old Cathedral of Marseilles, tombs at Le Mans and Tarascon, a reredos at Avignon. They do not seem, however, to have made any impression on the French building profession, and during the following fifteen years the movement was at a standstill, till the enthusiasm for Italian art aroused in the minds of the French King and his Court during Charles VIII's campaign of 1495 set it going once more. Italian craftsmen of various descriptions, stone and wood carvers, painters and majolica workers, cabinet makers, bronze-founders, and garden designers were engaged to work in France. Close intercourse with Italy was kept up for the next thirty years by the foreign policy of the succeeding reigns, and the almost incessant wars in different parts of Italy which it involved. During this period troops of Italian craftsmen spread throughout France, the valley of

the Loire, Normandy, the Ile de France, and the neighbourhood of Toulouse being the chief centres of activity. The result of their presence manifested itself at first principally in the appearance of ornament and detail, occasionally of entire features in the Italian manner, in buildings otherwise of a Gothic character, such as the wing added to the Castle of Châteaudun in the first years of the sixteenth century [shown on the screen]. The same mingling of motives is seen in individual features such as the chimney-piece from the same building.

By the time Francis I. came to the throne on January 1st, 1515, Renaissance forms had become acclimatised. Though Italians were still frequently employed, the French builders had acquired some skill in the new style. The result was that a number of buildings began to arise which have been characterised as French construction in Milanese dress. The well-known example of Francis I.'s work, the Château de Chambord, is a case in point. The castle plan, the moat, the round towers, the spiral stair turrets, the steep roofs, the 'chemin de ronde,' the picturesque and irregular sky-line, are essentially French; but the pilaster treatment of the elevations, the decoration of the dormers and chimney-stacks, and the detail and ornament throughout, are drawn from the repertoire of the North Italian Renaissance, so like in its exuberance to the native Flamboyant Gothic, while the soberer work of Brunelleschi and the early Florentines, and of Bramante in his Roman manner, found little

*Extracts from a paper read before the Royal Institute of British Architects, March 18th.



DETAIL OF CURTAIN, THÉÂTRE FRANÇAIS, PARIS.
HECTOR D'ESPOUY, ARCHITECT, IN COLLABORATION WITH A. CALBET.



FACULTY OF MEDICINE AND CHEMISTRY, BORDEAUX. JEAN LOUIS PASCAL, ARCHITECT.

echo at this period in France. The qualities which charm in this style, the style of Francis I., as it is called, which prevailed roughly from 1515 to 1540 or 1545, are its picturesque and somewhat haphazard grouping, its ingenious use of Italian motives to clothe native building forms in a delicate embroidery of ornament, as in the entrance bay at Azay-le-Rideau [shown on the screen], or in the great staircase at Blois. This reproduces the mediæval type of which the classical example was the staircase of the Louvre built by Raymond du Temple in 1365, while the adjoining cornice is a reminiscence of mediæval machicolations. The style is lovable, too, in the interior, where its rather minute scale is more appropriate, and where the fineness and variety of its exquisite arabesques can be more fully appreciated.

The middle years of the sixteenth century in France were a period of intense intellectual and artistic life, when amongst other activities Italian literature and art as well as classical studies were cultivated with enthusiasm, and, in every department of life, refinement was pushed to its furthest limits. The court and upper classes generally were both prodigal and discriminating in their patronage of all branches of art, and in particular in the building of splendid residences.

From this time onwards arose a new generation of men whose training was theoretical as well as practical, men like Philibert de l'Orme, Jacques Androuet du Cerceau, and Jean Bullant; men who read and travelled, and in some cases visited Italy and sketched and measured

buildings there. This brought about one side of the change. The other was due to the new sources of inspiration; for both the young French architects and the Italians whom Francis continued to attract to France were now imbued with the ideas of the mature or Roman phase of the Renaissance.

The effect was soon seen in schemes considered as a whole from the start, in a broader manner, a greater regularity and symmetry, in a more systematic use of the orders and a more scholarly treatment of detail, as well as in the shedding of much mediæval practice, particularly such as related to fortification. At the same time much that was both national and picturesque was retained. Round towers and spiral stairs, oriels and turrets, steep gables and flying buttresses, crockets and finials and open crestings, and the delicate arabesque decoration of surfaces fell into disuse. On the other hand the large mullioned windows and tall dormers and high-pitched roofs—one pitch to each block—remained, and the vertical character of design was thus maintained in elevations, as well as by the frequent rectangular pavilions, which replaced circular towers. There had thus been evolved an architecture which, if it still bears upon it both the faults and the charm of youth, may yet be regarded as having reached the first stage of maturity.

France, then, within the middle years of the sixteenth century had arrived at a style based on the Classic code of forms and composition, which suited her then requirements, and which eventually

proved susceptible, by a process of relatively small successive modifications and adjustments, simplifications or elaborations, of adaptation to the changing conditions of social life up to the Great Revolution. It was perhaps the more fitted permanently to satisfy a variety of French requirements in that the foreign element in its composition was itself of a twofold nature. The mature Renaissance was introduced from Italy at a time when it was already beginning to bifurcate into the twin-stream of Michelangellesque Baroque and puristic Palladianism.

A type of plan for the great house in town or country had by the time of Henry II. been evolved from that of the mediæval castle and became fixed for succeeding centuries. This is true, however, only of the general outline and massing, for changes in the habits of social life were to call for many modifications in the internal arrangements from time to time. In essence this plan consists of buildings surrounding an enclosed rectangular courtyard with the main block at the back, a screen in front containing the entrance, while the sides were either extensions of the main block or lower galleries. At each angle of the court was a rectangular pavilion somewhat higher than the adjoining buildings, with occasionally a pavilion larger than the rest in the centre of the main block. Subsidiary courts were also added on various sides, such as garden courts, forecourts, kitchen, and stable-courts. The tendency was for the main block to grow in importance at the expense of the remainder, becoming deeper and receiving pavilions

at each angle. The court came to be enclosed by nothing more than balustraded terraces, railings, or even merely lines of trees, while the moat, wet or dry, which enclosed the main court, persisted at least in occasional use down to the Revolution, as also did the wholly or partly detached pavilions at the angles and entrance of the Court.

If, besides the plan, we examine many of their features specially associated with a particular style we shall find that they were already present at least in embryo in the sixteenth century. The characteristic high-pitched roof derived from the Middle Ages never at any time up to the present day ever went out of use, even in the most classicising periods. It is a striking fact, for instance, that at Versailles itself the chapel which so sadly mars the symmetry of the palace is the only executed part of a scheme to re-roof the whole vast building with high roofs. Again, two forms of steep roof so characteristic of French practice in the seventeenth and eighteenth centuries, the so-called Mansard roof with its broken slope, which every schoolboy knows—and knows wrongly—to have been invented by François Mansart, had already been employed by Lescot at the Louvre, and the curved hipped roof or square dome familiar at the Pavillon de Sully, the Palais de Justice, and elsewhere, occurs frequently in the drawings of Jacques Androuet du Cerceau. Further the flat balustraded roof so often censured as a fad of the age of Louis XIV. occurs as early as in Francis I.'s building at St. Germain.

Again, the brick architecture with rusticated stone coigns and bands typical of the reign of Henry IV. is foreshadowed in some of the designs for Charleval illustrated by Du Cerceau and in the outer pavilions at Anet by Philibert de l'Orme; and persists as late as the Chateau of Ménars built by Madame de Pompadour about 1760; while the accompanying feature of windows grouped in vertical lines by coigns or pilasters is traceable not only to the style of Francis I.—we have seen an instance of it at Blois—but to late Gothic buildings, as, for instance, the episcopal palace at Evreux. Much the same may be said of decoration as of architecture. All later styles of decoration in France derive much, if not all, from the stock of ideas already possessed by France in the Middle Ages or acquired by the time of Henry II. Not to multiply unduly, I may instance one detail of ornamentation usually associated with the Louis Seize style—the oval medallion over which a garland with pendent ends is draped—as occurring as far back not merely as 1665 on Perrault's Louvre but as 1565 on Lescot's Louvre.

Renaissance architecture in France may thus be said to have reached in the mid sixteenth century a stage of at least incipient maturity, not only as regards the character of its buildings *per se*, but because it already contained, either in germ or fully developed, nearly all the elements which went to the making of subsequent styles.

The author illustrated the further progress and development of the Renaissance in France by describing the influence of the revival of classical studies in the seventeenth century, and the work of Salomon de Brosse, the Mansarts, Louis le Vau, Jacques Ange Gabriel, and other makers of the Renaissance, due attention being given to the details of the interior design and decoration, as well as to the developments of style in the elevations.

THE NEW KING'S COLLEGE HOSPITAL.

The site of the new King's College Hospital at Denmark Hill, which was the objective of the fifth spring visit of the Architectural Association on Saturday last, comprises about twelve acres, and was presented by the Hon. W. F. D. Smith, the chairman of the Hospital Committee.

The urgent needs of the adjacent poor districts will be served by the new hospital.

Building operations were commenced in the year 1908, and by next year the outpatient and administration departments, six of the nine ward pavilions, operating theatre blocks, isolation block, pathological wing and medical school, and the chapel and central station, with their accessories, will be complete, and, it is believed, will constitute one of the most notable hospitals in the world. The remaining ward blocks and other extensions will be deferred until financial conditions of support justify their erection and equipment.

In the wards, 372 beds are provided for in the first portion, and are contained in six pavilions. The block on either side of the central station (now in carcass) is three storeys in height; the remaining pavilions are of two storeys. The blocks are similar in plan, each floor consisting of a main 24-bed ward, 108 ft. 1½ in. in length, with two single-bed wards and rooms for clinic, sister, duty-room, linen, etc., and a day-room for patients. In the completed scheme the whole of the south front of the hospital will be occupied by wards, enjoying the pleasant outlook over Ruskin Park.

The main corridor is 800 ft. long, and is the spine of the hospital, connecting the various buildings. The eastern part of the corridor is now in course of erection to provide direct access from the outpatient and other departments, together with the receiving room to the hospital wards.

The administration block comprises the official matron's and nursing departments, and is a building of six storeys. The nurses' home and servants' department are self-contained in the upper floors.

The present accommodation is for two hundred nurses, which in the future will be extended to three hundred. It is also hoped to provide accommodation for fifteen sick nurses on the first floor of the west wing.

Ferro-concrete on the Hennebique system has been adopted throughout for floors, stanchions, beams, staircases, and in the case of the roof to the kitchen in the basement.

The nurses' dining hall, accommodating 150, is a feature of the east block, being served directly from the kitchen in the basement below.

The board room, 42 ft. by 27 ft., is to seat forty members, and is approached by lobbies off the central corridor.

The central station is accommodated at a lower level between the two central ward blocks. Three Lancashire boilers, 30 ft. long, are provided for the supply of steam. An interesting feature of the station will be the Diesel oil engines—used, it is believed, for the first time in a hospital—for driving the electric dynamos.

The chapel and the linen department are situated at the rear of the administration block, between the two central ward blocks. The chapel is to seat 250, with wide aisles for wheeled chairs. It is arcaded and vaulted, and will have

characteristic qualities in which ferro-concrete occupies a place. The approach is by a low vaulted cloister.

The accompanying illustrations, including the Centre Plate, show the outpatients' department. The materials indicated are Lawrence's red bricks, stock bricks, and Portland-stone dressings. The turrets are covered with lead, and the arms (in lead) have been modelled by the Bromsgrove Guild.

The architect is Mr. William A. Pite; the consulting engineer Professor D. S. Capper, M.I.C.E. (of Kirkland and Capper); the sanitation is under the direction of Mr. Charles T. Walrond, A.M.I.C.E.; the contractors are Messrs. Foster and Dicksee, Ltd.; the clerk of works is Mr. Thomas Simpson, M.C.W.A.

IN PARLIAMENT.

(By our Press Gallery Representative.)

King Edward Memorial.

Captain Murray has addressed to the First Commissioner of Works further questions with regard to the King Edward Memorial. Mr. Wedgwood Benn, representing the First Commissioner, stated that the Executive Committee met on March 7th, and inspected a sketch model of the memorial which it was proposed to erect at the Piccadilly end of the Broad Walk, Green Park. The model would shortly be placed in the Tea Room of the House of Commons, with a ground plan showing the site suggested. Captain Murray asked whether the Shadwell Park scheme had had any influence in the recommendation. Mr. Benn replied in the affirmative. He added that if the Shadwell Park scheme was to be proceeded with the Broad Walk scheme must be approved.

Westminster Improvements.

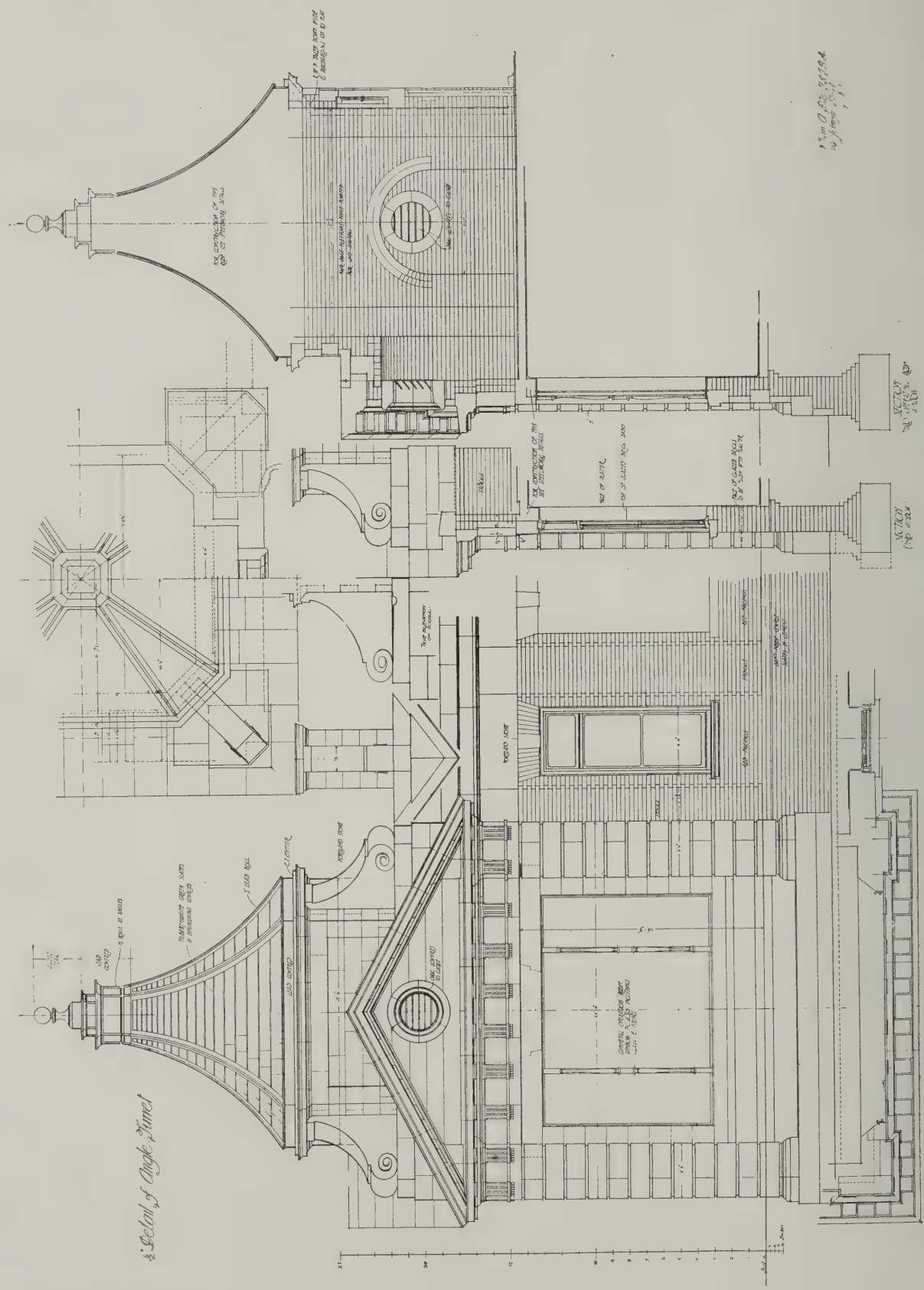
Mr. John Burns has promised Mr. Fell that he will communicate with the First Commissioner of Works and the London County Council and see what can be done in the way of laying before the House a plan and description of the improvements between the Victoria Tower and Lambeth Bridge.

New Government Offices.

Mr. Wedgwood Benn has introduced a Government Bill to make provision for the acquisition of a site for public offices in Westminster, for the acquisition of land for the further extension of the Patent Office and for purposes in connection with the Record Office, to amend the Public Offices, Sites (Extension) Act, 1908, and to make provision for certain other public purposes.

Life of Timber Structures.

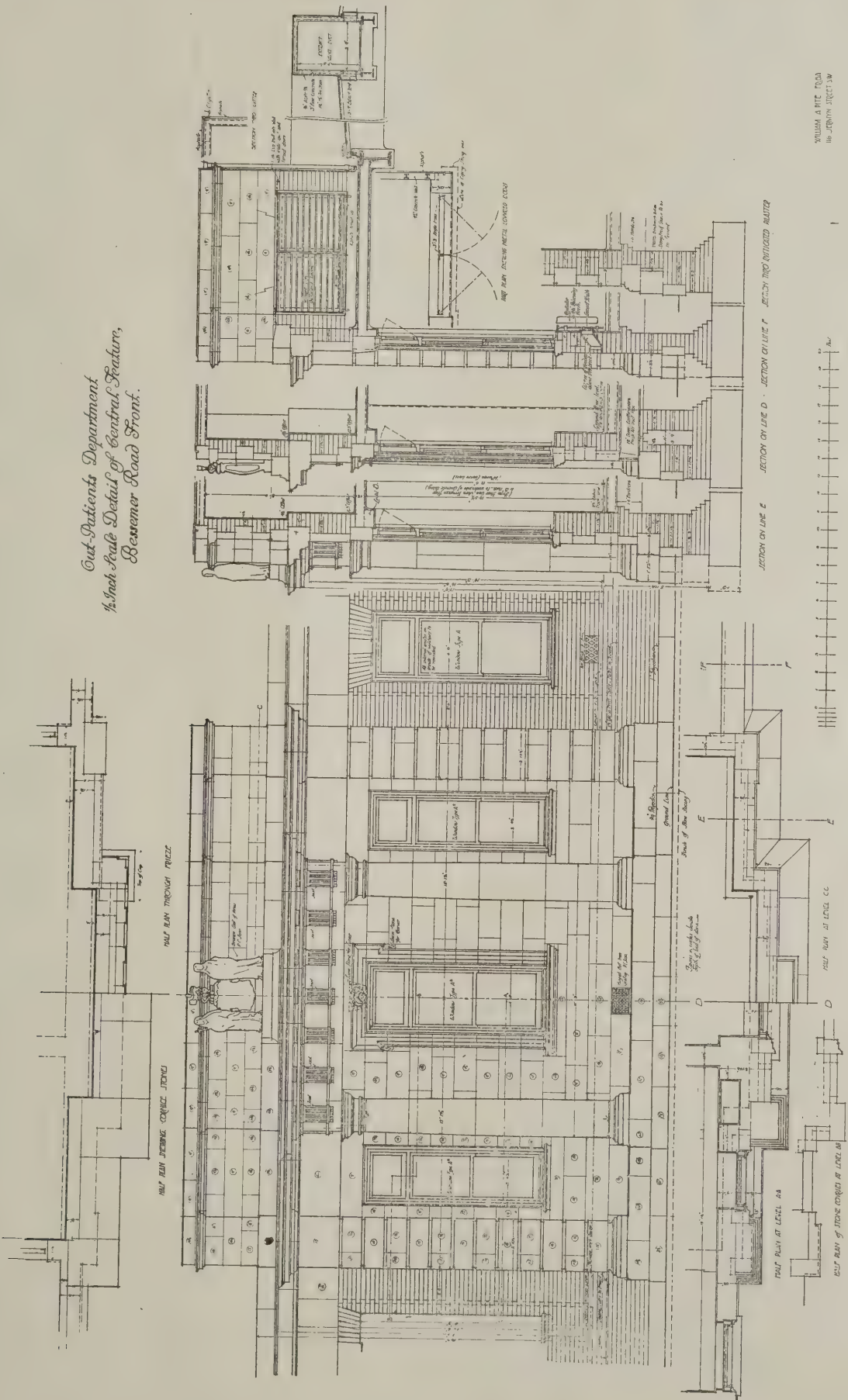
Mr. Bathurst last week made an effort to persuade the President of the Local Government Board to reduce the repayment periods for loans for timber buildings and fencing under the Small Holdings Act. He said that for fencing creosoted under pressure a term of fifteen years was allowed, and for wooden buildings chemically treated under pressure, situated upon a brick floor and with a proper roof, twenty years was allowed. In his own experience he knew of buildings made of creosoted timber which were put up thirty years ago, and were as good to-day as they were then. If wood was properly creosoted under pressure it ought to last from thirty-five to fifty years without danger of decay. The life of a building roofed with corrugated iron depended on whether the iron was properly painted with red oxide or some other preservative to ensure protection against oxidation. The life of fencing,



Architectural drawings of the University of Pennsylvania Library, including a half plan at ground level, a half plan at the first floor level, and sections A-D and C-D. The drawings show the building's facade with a large arched entrance, a series of windows, and a central tower. The half plan at ground level shows the layout of the building, including the entrance, a large hall, and a series of rooms. The half plan at the first floor level shows the layout of the upper floor, including a large hall, a series of rooms, and a central tower. The sections A-D and C-D show the building's structure, including the walls, floors, and roof. The drawings are labeled with dimensions and notes.

DETAILS OF KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E. WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

Out-Patients Department
1/4 inch scale Detail of Central Feature,
Beverly Road Front.



DETAIL OF KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E. WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

he said, must be at least thirty to thirty-five years, and if it were tarred or painted its life would be quite fifty or sixty years. He could not understand how all those structures were grouped together regardless of the actual material and the measures taken for protection and preservation. By the exigencies of debate, Mr. Bathurst was left without a reply.

Ancient Monuments.

Lord Southwark has introduced in the House of Lords a Bill for the protection of ancient monuments. It may be recalled that the Prime Minister, in the House of Commons, promised that the First Commissioner of Works would shortly introduce legislation for this purpose.

Public Works and Buildings.

The Civil Service Estimates for the year 1912-13, which have just been issued, include a sum of £3,638,080 for public works and buildings. This shows a net increase of £171,384 compared with 1911-12. For labour exchanges and insurance buildings a sum of £215,300 is asked, as against £140,000 in 1911-12. The estimate for the Houses of Parliament Buildings is £50,800. This includes £550 for providing the granite base and setting up Rodin's bronze figures "Burghers of Calais" in Victoria Tower Gardens. The expenditure of new works, etc., under this head is £2,525, as against £4,335 in 1911-12. For warming, ventilating, lighting, etc., £27,860 is required, and for furniture £3,600. For the alterations to the roof of the British Museum, with a view to better protection from fire a sum of £3,500 is to be expended during the year, the total revised estimate of the work being £9,500. Of the £25,000 required for the new Spirit Buildings at the Natural History Museum £8,000 is to be voted in 1912-13. Of £20,000 for the acquisition of property for the extension of the Royal Scottish Museum £5,000 will be required during the year. A great deal of new work is provided for in connection with post office and telegraph buildings throughout the country, and £1,000 out of the provisional total of £20,000 is to be taken for the erection of the Home Office Industrial Museum at Westminster. Of the original estimate of £95,000 for the new west wing of the Law Courts, another £35,000 will be taken during 1912-13.

The Unionist Housing Bill.

On Friday last week, Sir A. Griffith-Boscawen moved the second reading of his Housing of the Working Classes Bill, which was met by an amendment for its rejection, moved by Mr. Wedgwood. Briefly, the Bill proposes to consolidate the housing Acts already in existence and strengthen their operation. A special department of the Local Government Board is to be set up to supervise the operations of local authorities under the Housing Acts, and where local authorities neglect their duties the Local Government Board may step in and carry out the necessary reforms at the expense of the local authorities concerned. Grants from the National Exchequer amounting to £500,000 for the relief of overburdened rates for housing are contemplated. Any local authority will be empowered to pay compensation to a landlord whose slum property is destroyed on condition that he agrees not to rebuild on the same site without the sanction of the local authority. Local authorities are also given power, when a slum area is cleared, to build new dwellings in suburban and outlying districts wherever facilities for

cheap travelling enable working men to live at some distance from their work. Mr. Burns, it is to be noted, spoke strongly and humorously against the Bill, declaring that when the proposed Housing Commissioners came into the Local Government Board, he would walk out but in spite of Mr. Burns's opposition to the Bill, the amendment for the rejection of the Bill was defeated without a division, and the second reading was thereafter agreed to. The Bill, therefore, will in the ordinary course be considered by a standing committee.

NEWS ITEMS.

Newport Master Builders' Association.

Mr. W. Richard Pitt has been elected president and Mr. J. J. Partridge vice-president of the Newport and District Master Builders' Association.

The Waygood Athletic Association.

The Waygood Athletic Association held their 21st annual concert at The Horns Assembly Rooms, Kennington Park, S.E., on Monday evening, February 11th. An excellent programme was given, which was accorded a hearty welcome from a most appreciative audience.

The Design of Street Gullies.

At the Institution of Municipal Engineers, 39, Victoria Street, S.W., on Tuesday, March 26th, at 7 p.m., there will be an open discussion on "The size and design of street gullies and weirs." Members are invited to bring to the meeting drawings and, if possible, models of any street gullies or weirs which have come under their notice.

Marylebone Town Hall.

On Thursday last the Marylebone Borough Council approved the design of Mr. Edwin Cooper, F.R.I.B.A., for the new Town Hall, with the exception of the tower, which was referred back to the committee for further consideration. In accordance with the plans submitted, the estimated cost of the building is £61,913, the tower requiring £1,900. The site of the new Town Hall, is on the south side of Marylebone Road, by Gloucester Place.

The Proposed Mural Painting Exhibition.

The committee of the forthcoming Exhibition of Designs for Mural Paintings and for the Decoration of Schools, etc., have now issued a final circular containing full particulars of the competitions offered to artists and of the exhibits which it is hoped to secure. The exhibition will be opened at Crosby Hall, Chelsea, on Saturday, June 1st; and a number of definite offers of wall-spaces to be decorated and of funds to bear the expenses have already been secured. The circulars will be sent to anyone interested on application to the Hon. Secretaries, Mural Decoration Committee, Crosby Hall, S.W.

Auctioneers and Estate Agents' Institutes Amalgamate.

The amalgamation of the Incorporated Estate Agents' Institute with the Auctioneers' Institute of the United Kingdom (Incorporated) was formally agreed to at an extraordinary meeting of the Estate Agents' Institute at Hanover Square recently. Mr. Howard Frank, the president, was in the chair, and there was a large attendance of members, including Mr. James Boyton, M.P., who is a

past-president of both organisations. It was resolved to wind up the Estate Agents' Institute voluntarily, Mr. W. H. Wells and Mr. W. J. Taylor being appointed to carry out the formalities.

Business Memoranda.

Claridge's Patent Asphalte Co., Ltd., 21, Surrey Street, Strand, W.C., announce that they have now been connected to the telephone service, number 8836 City. A notice of this firm's products was given at p. 223 of issue for February 28th.

Lock Woven Mesh reinforcement (Messrs. George F. West and Co., Caxton House, Westminster) is being used in connection with the Windsor Castle water supply, for covering the new reservoirs, by H.M. Office of Works.

Messrs. John Tanner and Son have been entrusted with the whole of the reinforced concrete floors, with fibrous plasterwork and decoration in conjunction, at Longton Town Hall, Staffs., the architect of which is Mr. T. J. Beckett, of Longton.

Changes of Address.

Mr. H. Guicharde Todd, F.S.A. (Scott.) M.S.A., architect and surveyor, has moved from 6, Cheapside, E.C., to Southampton House, 317, High Holborn W.C. Telephone: Holborn 627.

The Atmospheric Steam Heating Co. (1907), Ltd., announce their removal to more central premises, 22, Broadway Westminster, S.W. The new telephone number is 5833 Victoria; telegrams to "Metro, London," as usual.

As from March 15th the offices and warehouse of the Yale and Towne Co. (from which only a wholesale business is conducted with the trade) are removed to 17-20, West Smithfield, London, E.C. Telephones, 7660 City; 7661 City. Telegrams, "Yaletowne, London." At the new premises, considerable additional accommodation has been provided for the firm's constantly increasing business to facilitate the handling and despatch of all orders, and a comprehensive stock of Yale products (patent locks, etc.) will be held to meet all demands.

The Prudential Assurance Company.

In presenting the sixty-third annual report of the Prudential Assurance Company, on March 7th, the chairman stated that the total income of the company was £15,252,937, being an increase of £370,961. The company, he said, provided for all classes, accepting premium yearly, half-yearly, quarterly, monthly or weekly. Applications from industrial policyholders who desired to discontinue payment of premiums and accept for policies were 4,570 less than those received during 1910. £500,000 had been applied to writing down ledger values, securities and increasing the investment reserve fund. The total surplus was £3,469,908, and there was an increase in bonus in both branches. Industrial branch—5 per cent. to 50 per cent. on claim during the forthcoming year (in 1911 £6,760,000 has up till now been distributed by way of bonus and increased benefits amongst industrial policyholders). Ordinary branch bonus—36s. per cent. There had been a decreased rate of expense in both branches—Industrial branch, 33 per cent. on income; Ordinary branch, 6 per cent. on income. Increase in interest yield was recorded; and there was every probability of increased bonus rates in the future. The company, it was announced, are forming an approved society for the purpose of working the National Health Insurance Act.

oured to forget it as quickly as possible. But this does not obtain. He will advertise his misdeeds without compunction side by side with other works of his own of which he may reasonably be proud.

Another element which militates against much real progress is the growth of specialists. Not only do the ordinary structural specialists flourish on every hand, but they will go beyond their European prototype by contracting to carry out an architect's small-scale design, with detail and ornament of high technical and perhaps artistic merit, without the architect in the multitude of the other concerns of his profession having to trouble himself too much on this head.

Execution.

The American architect appears to have wider responsibilities than the architect here. This is more particularly true in the case of the larger works. There is a very general understanding that each man should rule his own roast. The architect will be expected to produce a satisfactory result without having to be guided except on general lines by the client. It may be that the client is only building as an investment, and knows nothing of good or bad work.

In such circumstances the architect will probably find himself with an absolutely free hand.

This will demand from him close attention to rule and convention. Any hostile criticism of eccentricity of design will shake the faith of a purely commercial speculator, and so we find a certain amount of restraint upon originality and genius.

Building Regulations.

Another restraining element is the fact that in most of the large centres there is a very rigid building regulation which demands the production of full plans, details, and calculations for inspection by the local authority in order that a building permit may be considered. The omission of essential information will delay the permit being issued, and the work itself will be consequently retarded. Novelties or variations from customary procedure will, as may be expected, be looked upon with suspicion by the building officials, and cause possibly lengthy explanations and inquiry.

When his building permit is obtained there is the risk of objection by the building inspector if variations from the approved plans are attempted.

In this position the architect will also feel compelled to work upon safe lines. He cannot have the luxury of watching his building develop and of making alterations and improvements in the design as the work proceeds.

Of course, the splendid generosity of wealthy patrons frequently affords the architect an opportunity of exhibiting his genius free from all such trammels as have been referred to above.

I venture to suggest, however, that these isolated cases do not represent the main stream of architectural life in the country.

Further Restrictions.

Remember, too, that native artisans are practically non-existent. The architect may even find it necessary to have his work executed here in England or on the Continent. This cannot conduce to progress.

The crude native sculpture on some Celtic monument is still more highly regarded than the careful carving by the contemporaneous workmen in the streets of Rome of ornament and design copied from the Greeks.

Do not let us forget that we are here discussing American architecture, and I make the distinction between a native effort towards an ideal which shall be characteristic of the land and its marvellous people, and an architecture which may largely consist of careful adaptation of European models, but which shows no real ground for hope of progress in the near future.

Education.

Whatever I have said which seems to criticise adversely modern methods must be discounted in considering future prospects. Architecture will be safe from degeneration if continued effort is made on proper lines to train the coming generations. Not only will it tend to develop the art of architecture, but it offers a restraining influence upon the eager but unqualified who press into the profession.

A high standard of education is becoming more and more essential. The tremendous interests, both public and private, which are at stake in many of the large undertakings demand a high degree of technical skill. I think that public sympathy is strong on the side of rigorous examination and qualification for all practising architects. This, of course, is a hopeful sign, and the universities are alive to the necessities of the case. Harvard, for instance, offered a five years' course. There was an entrance examination which included English, French, German, Physics, Drawing, and Histories of Greece and Rome. The student had the advantages of a hall of casts, painting-room, exhibition-room, modelling-room, library, photograph dark-rooms, etc. The first year's course included the Technical and Historical Development of Ancient Styles, Drawing in Line and Colour, Mathematics, Languages, and Physics. In the second year Design, Perspective, Statics, Resistance of Materials, Mediæval Renaissance, and Modern Styles were added. In the third year Building Construction, Theory of Design, Masonry and Foundations, and Mineralogy were taken. In the fourth year, in addition to general topics, two special subjects had to be taken from a list which included Design in Painting, Sculpture, and Architecture, Greek Art, Fine Arts of the Middle Ages and of the Renaissance, Classical Archaeology, Private Life of the Romans, Life in Ancient Greece, Landscape Design, Æsthetics, Bridges and Buildings, Health and Ventilation. The average gross cost to the student for residence and education was only £100 per annum.

There was a somewhat similar programme given in connection with Washington University, and at a somewhat similar cost.

The Massachusetts Institute of Technology at Boston gave a very full five years' course with a continuous training in design for three years' Freehand Drawing throughout and one complete year in the Life Class. A feature of these college courses is the Summer Schools. I have a note of one which was in the form of a tour to Europe particularly for the study of the work in the northern towns of Italy, finishing with a bicycle excursion from Genoa to Paris.

The University of Pennsylvania offered three separate courses—namely, a four-year course leading to the degree of Bachelor of Science in Architecture, another course leading to the degree of Master of Science in Architecture, and a shorter two-year course. There was an

additional three years' course in Interior Decoration.

The Syracuse University provides almost equal facilities for the student. These are but illustrations of the numerous facilities for study and preparation for the profession.

The total result is generally seen in the fact that the majority of the young men in the offices of practising architects are college men with a college degree. Incidentally, there is a minimum of the mechanical drudgery which in many London offices is handed over to inexperienced youths who may possibly grow up to exploit the special features of the work done by their employers.

If one may venture into the realm of prophecy, it must be to express the belief that there is a bright prospect for architecture in America.

Education of Public Taste.

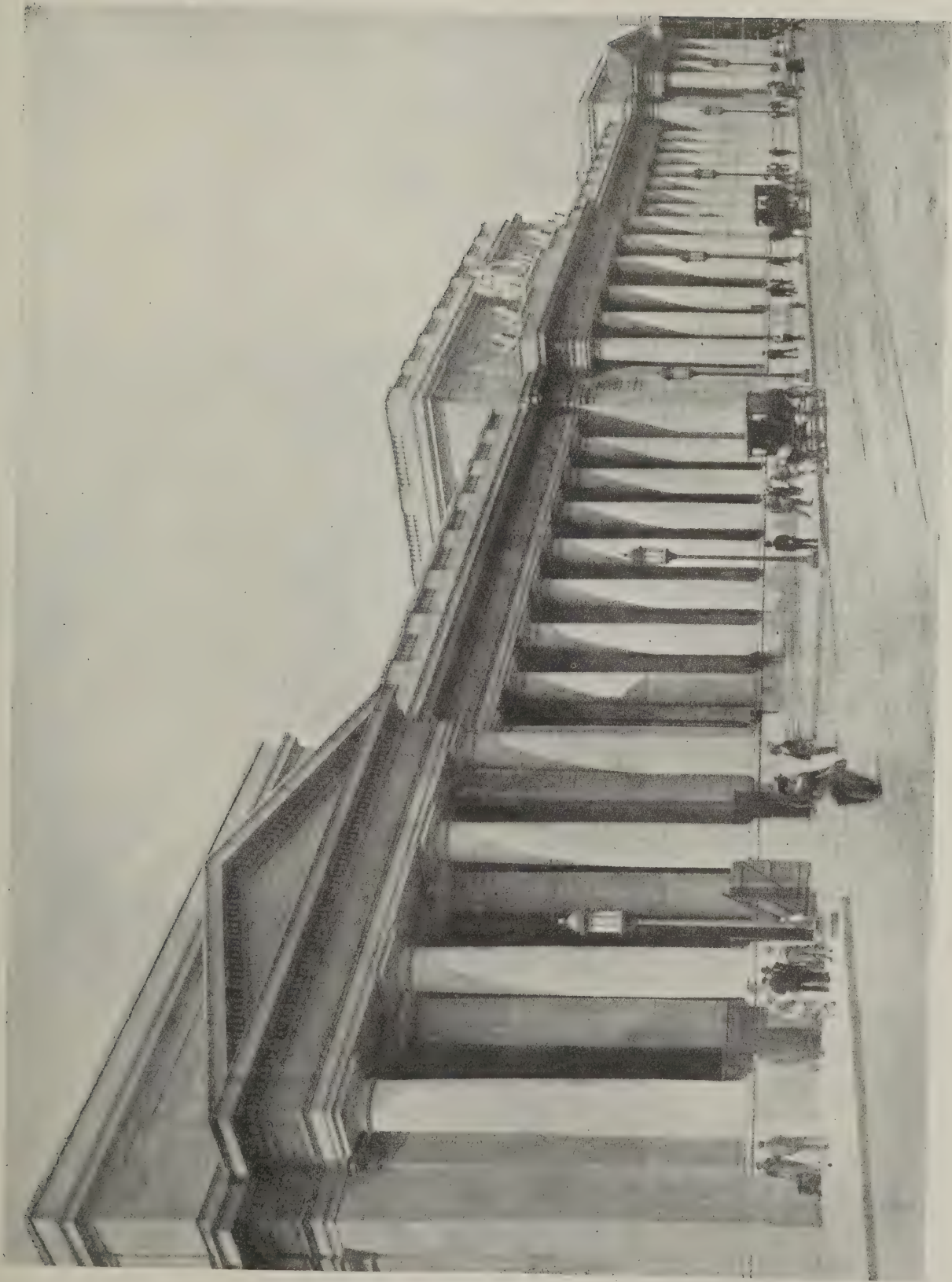
The question as to whether this will be realised in the near or distant future depends upon one main factor—namely, the education of the public taste for the beautiful. As matters stand at the present time, art may be degraded and good taste may be corrupted by being compelled to follow on the heels of those who act on the principle that just as in some commercial undertaking wealth and power can demand a rigid obedience, so in the realm of art the artist must follow the lead of his employer, provided he can purchase his compliance at a princely price.

The good time would be brought within measurable distance by a period of commercial depression. Architects might then find time to turn their attention to the everyday affairs of the community. A tenement house would not then be recognised as now, as a ghastly imitation of a factory, or the ordinary suburban dwelling as something very much akin to a wooden barn.

Architects might even find time to raise protests against the desecration of the public streets by hideous advertisements and encroachments upon the public convenience by corporations whose only concern is for the dividends of their shareholders. There would then grow up a corporate sense of what is good and that a man should not have a free hand to offend the good taste of his fellow citizens, even though he may be a successful business advertiser.

"In Truth and Beauty."

In conclusion, may I again venture prophecy that if we are anxious to make real progress we shall do so only on the lines adopted with success in the States. Registration is a futile procedure if it results only in shutting within a rind fence the good and the bad. We must begin where all real progress begins—in the school and in the workshop, in the public press, in the common affairs of life. When the authorities who are responsible for the bridges across our rivers and the lamp-posts in our streets, when the factory and the mine proprietors who can and does blast the landscape and ruin our buildings by the reek of their works, when the workman, as in days gone by, recognises that it is as easy to make a beautiful thing as it is to make an ugly thing, when the community at large expects that the little things of life shall be presented in a true and beautiful form, we shall have no cause then for anxiety for those larger works which have too long been looked upon as the only and proper sphere for the architect and artist alike.



PENNSYLVANIA STATION, NEW YORK: FAÇADE TO SEVENTH AVENUE. McKIM, MEAD AND WHITE, ARCHITECTS.

II.—MR. C. C. BREWER.

The chief characteristics of American architecture to-day seem to me to be vigour, competence, singleness of purpose. All these are, of course, the outcome of the national spirit, the amazing commercial activity, and the climatic conditions. A country progressing at the speed of America to-day has crying need of a race of competent and vigorous architects, and forces them to the single purpose of erecting the best possible building in the shortest possible time. It leaves them no leisure for the "Hopes and Fears for Architecture," or "Philosophic Doubts." Do not let me be misunderstood. I am not suggesting that haste is apparent in the best building of America of to-day, for I hold strongly that the architects are rising, with almost incredible success, to meet not only the commercial and practical needs of the community, but to work out artistic problems with a certainty, a dignity, and a breadth the equal of which it would be hard to find in any other period. Indeed, I believe the history of architecture of

mean than in most European countries, for the Americans are dealing with big schemes and new ideas even in advertising, and mean buildings grow less mean when set in the ample suburbs of American cities.

Pennsylvania Railway Station.

As an example of what I mean by big ideas, even in advertising, I would instance the new Pennsylvania Railway Station in New York. A new station becoming necessary, the idea that the finest and largest station in the world might be no bad advertisement seems to have occurred to the directors, and their next step was to employ an architect of large and fine ideas; their choice fell luckily upon Mr. McKim. He seems not only to have entered into their scheme, but surely his enthusiasm must have carried them on till the undertaking grew almost in the spirit of cathedral builders. The result is a temple to the glory, not only of the Pennsylvania Railway Company in particular, but of well-ordered and swift transport. You have probably all seen photographs of

office buildings, and banks. Can the Americans be learning the market value of repose in the midst of their strenuous life?

It may be argued that there is no real newness in this great Pennsylvania Station—that the hall is a mere translation of the Baths of Caracalla on, I believe, a larger scale; that the detail on this and most other buildings of the same type in America is directly taken from Italy or Greece.

Evolution of National Style.

This brings me to the wider criticism of their architects which is so often made by Americans to-day: that they are not evolving a national style. It is surely difficult for contemporaries to judge whether or not a style is being evolved in any art, and it is probable that the same critics, had they lived in the seventeenth century, in Italy, would have been chiding the architects for being mere copyists of the Romans.

I cannot believe that men who are approaching architectural problems with the freshness, vigour, and clearness of



UNION STATION, WASHINGTON. D. H. BURNHAM AND CO., ARCHITECTS.

the last twenty years in America will be read almost as a fairy story by future generations.

Rush and Hustle.

Mr. Daubney has hinted at the conditions of rush and hustle under which these buildings are produced, and has not—could not—exaggerate it; nor should it ever be forgotten in judging the results. It is, indeed, a matter for amazement and admiration that even skyscrapers, for which the working drawings of a completeness undreamt of in England are said to have been made in a period which could barely suffice with us for the preliminary sketches, do not more often shriek aloud to the world the horrid tale of the speed of their conception, labour, and birth.

In judging the works of architecture in any country to-day I hold, of course, that it is only fair to put out of court perhaps 75 per cent. of the buildings. We must judge by the large public buildings, the railway-stations, the office blocks and stores, and by the thoughtful and more serious domestic work for either the rich or poor.

An international comparison of cinematograph palaces, public houses, and the domestic vulgarities of the newly rich on the one hand, or the meannesses of the jerry-builder on the other, would be neither to the point nor profitable; the first are merely a form of pictorial advertising, and the jerry buildings are merely temporary structures within the meaning of the Act. In America, however, I believe that there is a smaller percentage of both the blatant and the

this wonderful building; but no photographs can give an impression of the effect which its vastness, orderliness, and completeness produce on coming to it out of the turmoil of New York.

Imagine an entire railway station with fittings and furniture, even to the spittoons, designed by the architects; a railway station so planned and so contrived that there is no noise nor bustle, where no porters intrude with luggage, and where it has even been thought worth while to forgo the profits of the bill-sticker that all may be well ordered and dignified. This last was the culminating stroke of genius, for the effect of a station where even the notices are subdued and where the direction signs are of bronze set upon marble tablets and advertisements are not, upon the mind accustomed to walls, ticket offices, and lamps covered with lettering and pictures of every size and shape is one of almost bewildering calm. It is as if the directors had said: "We will startle the public, not with glare and noise of our money-making, but with dignity and repose." And so to-day the conception of a railway station as a dignified thing seems to have taken hold of the Americans, and we have the big Washington Station and others in the same spirit. Comparing these with the three latest termini in London—the Great Central and the two at Victoria, which had not even the sense to be one—we weep for London.

The Dignity of Enterprise.

This idea of the dignity of commercial enterprise seems growing upon the business men and showing itself in the stores,

thought of the Americans of to-day will not leave behind them something worthy to be called a national style, even if they are content, for the while, to use and reuse the language of the past.

Speed and hustle are the natural parents of copying in architecture. The man, set face to face with enormous problems to be tackled at great speed, turns naturally to the text-book for his details, and I am not sure that, given speed as one of the conditions, the results do not gain in the process, for the architect has the more time for mass and the big idea.

The Trend of Architectural Training.

Certain it is that the trend of architectural training in America is to this end—to train competent architects and competent assistants, not thinkers and writers on architecture. The man who knows where to find chapter and verse in those wonderful libraries which seem to be a *sine qua non* in every large office, and how to use the matter when found with a competent good taste and discretion, is the man to help the designer of big schemes. And I must admit that one rarely sees a draughtsman on the architectural side of a big office without a great folio of Renaissance or Classic art at his elbow.

A word as to training. Mr. Daubney has given a rough sketch of the curriculum in vogue some ten years ago, but has said no word as to the influences at work within the schools themselves. That this is entirely French no one will deny. At the time of my visit Harvard was preparing to celebrate the arrival of a French-born, French-speaking, and French-trained Pro-

fessor of Design, and Harvard was the last college to hold out against the Beaux-Arts tradition. All the others had already either Frenchmen or Americans trained in the French manner as their guiding spirits. Harvard and Boston architects had long fought for training on more English lines, but the force of the Beaux-Arts movement, as evidenced by the roll of students in their own and other colleges, counselled surrender.

French and Italian Influence.

In the face of this it is a matter of surprise to me that American work is not showing even stronger evidences of the French fashion. This may be somewhat accounted for by the great influence of McKim, who, although French-trained, yet drew most of his inspiration for his later work from Italy. But I hope the reason is rather the growing strength of a tradition of their own, a strength fostered by the individuality of the American character, and their brilliant qualities of self-reliance and rapid, straightforward thought.

As to the influence of their own colonial style, this seems to me for the moment under a cloud. Much that has been perpetrated by the jerry-builder under cover of the word colonial has swung the pendulum of fashion a little far from New Zealand and Virginia, and, although many men of taste and

culture are using the vernacular in their domestic work, one is a little sorry to find that development along these lines does not seem likely.

The Growing Feeling for Gothic.

The lack of mediæval building in America itself, and latterly the Beaux-Arts training, no doubt account for the poverty as a whole of the ecclesiastic and domestic work. The wave of the Gothic revival can only have been a feeble ripple by the time it reached the States, for it left behind it a trail of thin and wiry buildings of unimaginable meanness.

Richardson, with his strong if at times somewhat clumsy hand, left his mark upon the town halls and churches of his day, and was followed by less strong men, who, by their eccentricities, soon brought his manner into disrepute. His influence seems to linger, to-day only in the West, where the work of that brilliant architect and contriver of clever detail Mr. Louis Sullivan still shows signs of early Richardsonian influence. The success of Cram and Goodhue's Gothic scheme in the competition for the rebuilding of West Point, and the masterly manner in which they are carrying it through in the face of much adverse criticism, is evidence that there is now a finer feeling for Gothic work. The French and Classic tide is not quite sweeping all

before it, and there still remains a small but faithful band of thoughtful men—"the Englishmen," they sometimes call themselves—who are fighting against it. The little leaven of their work may not be without good effect upon the lump, especially in the one quality in which American work of to-day seems lacking.

Shams.

On my return to England our work, at all events in our towns, had a very depressing effect on me. It seemed mean and muddled, and with an uncertainty and a hesitancy about it, as if we had been for many years without a goal. But we seemed, especially in the country, to have one quality which American work had not; I mean the right and truthful use of material. In the States one's sense of decency and honesty is constantly being hurt, and one's nerves jarred by shams so cleverly carried out as to deceive the eye if not the hands. I could quote instances without number, but one must suffice. There is at West Point a charming memorial hall by McKim; the interior has many bronze ornaments—some are cold to the touch, others, more difficult to reach, are warm. The entrance to the large hall is through a screen of caryatid figures, ostensibly of bronze; but the discovery of a horrid wound of plaster where two toes have been kicked off seems to take away any value the



PENNSYLVANIA STATION, NEW YORK: MAIN WAITING HALL, WITH EXIT TO THIRTY-THIRD-STREET.
McKIM, MEAD AND WHITE, ARCHITECTS.

building may have as a memorial. The use of stucco for stone, of plaster painted, and most cleverly painted, as oak, would seem not to be confined to the music-hall and the saloon, or to the work of vulgar men: such things are surely unworthy of so great and rich a nation. In England, even in our poverty to-day, we have one great heirloom from our Gothic past, a certain love of honesty in materials, which gives even the weakest of us a sense of shame in their wrong use.

If I might borrow a little American confidence to sum up what seems to me the strongest characteristic of their race, I would say, "Knowing what they want and getting it." When the architects realise that besides vigour and certainty, competence and dignity, delicacy and brilliancy, they want also honesty, they will get that too, and then American architecture will come to its own.

DISCUSSION.

Mr. H. M. Fletcher, proposing a vote of thanks, remarked upon the extraordinary singleness of purpose of the Americans. Town planning was to them a very real thing, and schemes were being produced in amazing numbers. In no other country had so many great plans been produced within the last few years. They included schemes for Chicago, Cleveland, and Washington, which last city it was proposed to convert into a whole series of vistas. New York, of course, was not a fine example of city planning, and never could be, because of its restricted situation on an island. The Americans in their architecture, he continued, were giving all their attention to mass, grouping, and the big features; detail either went all to pieces, or was taken bodily from other buildings. An undoubted advantage was that the rich men of the country were anxious to have big schemes carried out.

Mr. A. G. R. Mackenzie, seconding the vote of thanks, and recalling a few impressions of his visit to the United States five years ago, said he met Stanford White, and saw some of his older work. Of the distinguished partnership to which he had belonged, White was rather the archaeologist. He periodically visited Europe and brought back with him quantities of material, including ceilings, tapestries, and even whole rooms. He did a great deal in the education of public taste in America; and it was owing to public interest in architecture that the progress there was so great. In America they talked about architecture as our public here talked about sport and the theatre.

Mr. W. H. Ward regretted the lack of originality and the absence of a national style in American work, but perhaps it was too early to expect anything of that kind. For future progress he was confident in the present methods of education; and he thought that, working through a European style, in the course of a half-century or so a national style would be evolved. They had made many experiments in various styles; but their Gothic, as represented by the New York Cathedral and the Roman Catholic Church on Broadway, did not impress him very favourably. One would find there, also, examples of every branch of Renaissance work in every country. It was in America three years ago, and when the Colonial style was the latest thing in domestic work. Apparently this had now been abandoned in favour of something else, thus illustrating the uncertainty of architectural opinion.

Mr. T. M. Whitelaw commented upon our inferior methods of education.

Mr. Arthur T. Bolton said he had not been to America, but had met a number of American architects. When at Seville, the speaker said he had drawn the attention of an American architect to the tower there, but he only replied, "I have an office in Madison Square, and I look out on that tower every day." [Mr. Brewer had previously shown, side by side on the screen, illustrations of the tower at Seville and its American reproduction by White.] Referring to the comparison, Mr. Bolton said that White had not been particularly successful in copying the original. In the case of this particular architect to whom he had referred, the rush of life in New York had completely knocked him out and destroyed his nervous system. Americans travelled very largely, of course, usually with an eye to business, and thus gained an interest in architecture which, with a large amount of money at their disposal, they were able to gratify to some purpose. It was said that too much attention generally was paid to old work; but if a new people in a new country did this there must surely be some reason for it.

Mr. Gerald Horsley said he was rather surprised that, in an account of American architecture, more was not said about Richardson and Hunt. Those two men were really the founders of modern American work, and they were both Englishmen. For some years past an American friend had kindly sent him the "Architectural Record," a publication which gave one a full insight into the progress of modern architecture in America.

Mr. Daubney, in reply, said that in America an architect was able completely to exhaust himself on his work. There was not so much of cramp as in England, and fewer limitations. There was not the necessity to grapple with difficulties in order to get round a problem. He could not help wondering whether the architecture of America would not be greatly advanced by a commercial catastrophe; for then the architect would be compelled to do more thinking.

Mr. Brewer, in reply, said the Americans were not mere hustlers; they were as keen as, if not keener than, we are in the appreciation of fine architecture. Over there the public were quite familiar with architects' names, and would discuss architects and what they were doing just as the same class of people here would discuss pictures. Referring to a question by Mr. Horsley, the speaker said the reason why little attention had been given to Richardson and Hunt was because of the large number of buildings existing which were mere caricatures of the work of the two men. Almost every town in America had a clumsy copy of some work by Richardson, and his style was one which did not lend itself to copying. They would not, perhaps, find delightful detail in American work, but there was nearly always an absence of muddle. The best shops and business places no longer employed big unsightly lettering for names on the fascia board; indeed, it was largely the practice to use a small neat letter on a metal plate, as had been done in the case of the Selfridge Store.

During the course of Mr. Brewer's lecture a large number of recent American buildings were shown upon the screen, many of which had been illustrated in our *Edition de Luxe*, 1909. With regard to the Municipal Office Building, New York, designed by McKim, Mead, and White, and illustrated on page 288 of this issue, Mr. Brewer supplied a few interest-

ing particulars. For this building, he said, more than 260 working drawings had been prepared by eight men in six months. These drawings, which were worked out to the minutest detail, were subsequently photographed down to a small scale, lithographed, bound up into volumes, and distributed for use. Two tramways and two tube railways run immediately beneath the building.

LAYING OUT THE NEW CAPITAL OF INDIA.

The Secretary of State for India has, at the request of the Government of India, appointed a committee of experts to advise the Government of India as to the site of the new capital at Delhi, and the laying out of the same. The committee will consist of Captain George Swinton, Chairman of the London County Council; Mr. John A. Brodie, C.E., City Engineer to the Corporation of Liverpool; and Mr. Edwin L. Lutyens, F.R.I.B.A. Mr. H. V. Lanchester, F.R.I.B.A., who is at present engaged in work in India, will join the committee. The committee will assemble at Delhi about the middle of April, where it will find materials ready for consideration, and will have the assistance of the Department of Indian Public Works, and of other Departments of the Indian Government. It will act under the instructions of and report to the Government of India. Its work, which will be of a general and preliminary nature, and will involve no questions of detailed planning or architectural design, is expected to occupy four or five months.

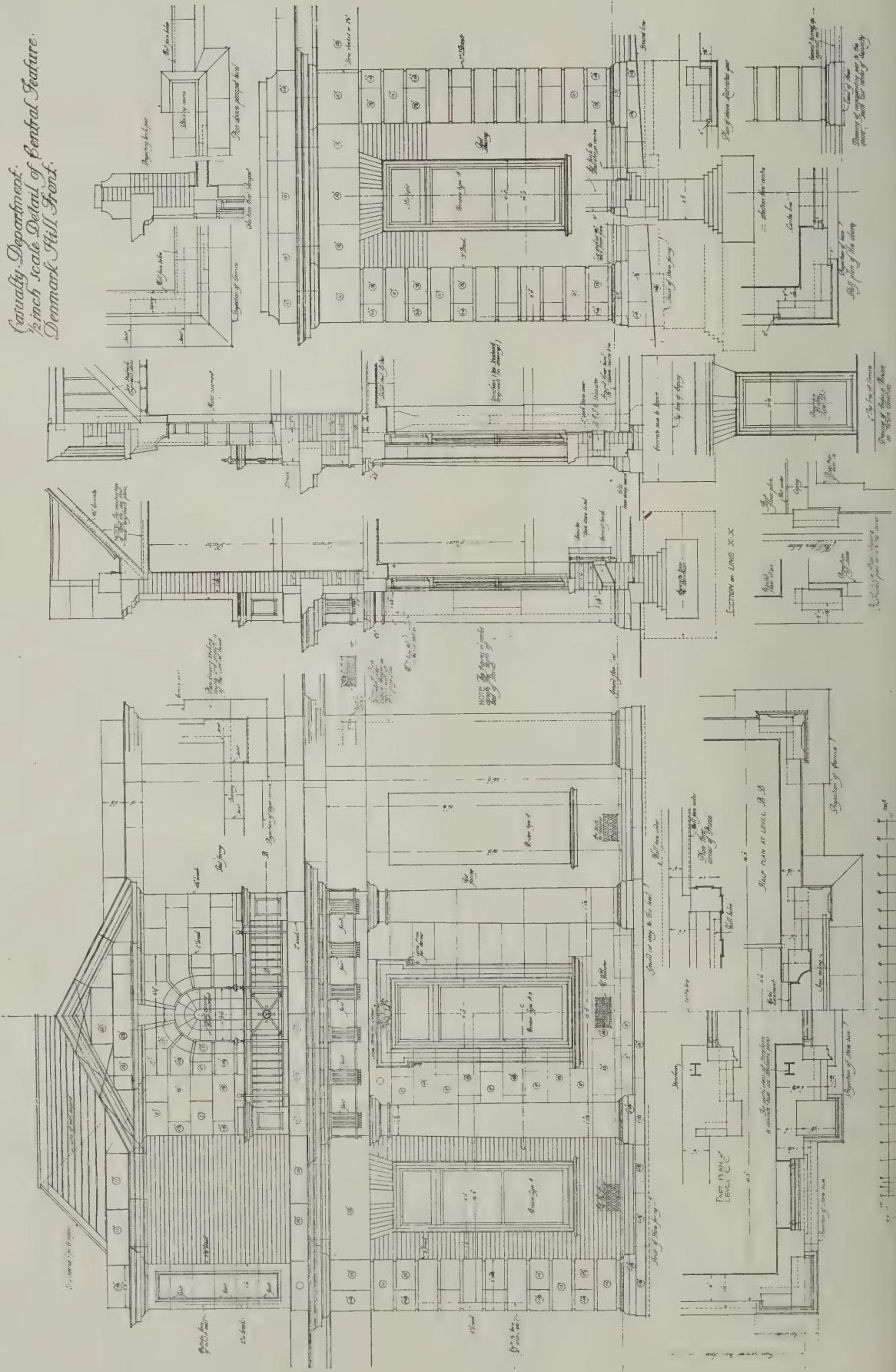
For the temporary accommodation of the Government of India during the five years the building of the new capital is expected to occupy, an area has been selected along the Alipur Road, between the present civil station of Delhi and the Ridge, where there are to be temporary offices and residences. The architecture and method of construction will be similar to those adopted in the exhibition buildings at Allahabad in 1910; but the buildings are expected to outlast the transitional period for which they are intended. They will subsequently be an asset of some value, the site they occupy becoming a suburb of the capital.

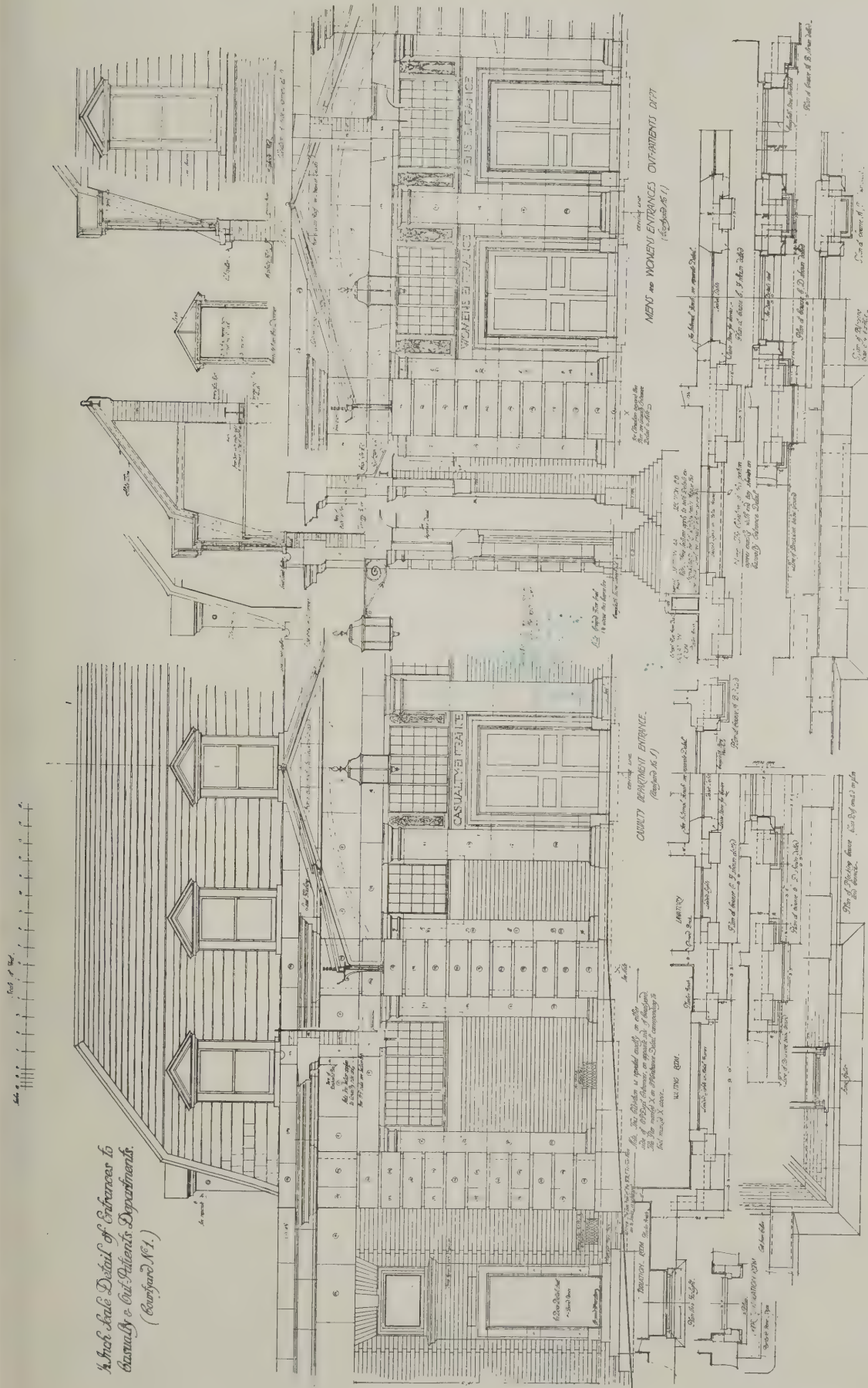
The offices to be built along the Alipur Road will form three sides of a square, and will be flanked on either side by lines of offices for the secretariat clerks, etc., and a temporary Council Chamber will adjoin the line of offices. Temporary houses for the registrars and European clerks may be erected near the Ridge, probably in the vicinity of the Khaibar Pass.

The late Mr. John Kershaw.

Mr. John Kershaw, whose death recently occurred in London, was for some years connected with the Great Indian Peninsular Railway, and also with the firm of Sharp, Stewart, late of Manchester, and with the Oldbury Carriage Works, near Birmingham. For the success of his superintendence of the G.I.P. railway at the famous Bore Ghaut, he received the thanks of the Indian Government. Mr. Kershaw was a member of the Institution of Mechanical Engineers and of the Royal Society of Arts. His only brother, Mr. S. W. Kershaw, F.S.A., who survives him, was for some years connected with the Royal Institute of British Architects.

Cavalry Department.
1/2 inch scale. Detail of Central Feature.
Denmark Hill Front.





DETAILS OF KING'S COLLEGE HOSPITAL, DENMARK HILL, S.E. WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

ELEVEN-INCH CAVITY WALLS.

BY EDWIN GUNN, A.R.I.B.A.

↑ Cavity walls, consisting of two $4\frac{1}{2}$ -in. thicknesses, with a 2-in. cavity, are now being largely adopted in cheap building, owing to the sanction of this form of construction given by the latest Local Government Board model by-laws. While they are greatly superior to 9-in. walls, and sometimes even to 14-in. solid walls, in dryness and non-conduction of temperature differences, their structure requires more thought and care, if they are to be sound, than it sometimes receives, and there are certain qualities (both good and bad) which they possess that do not appear to have been hitherto dwelt upon. Dealing with these latter qualities first, they are:—

(1) Great rapidity of heat radiation when rooms are warmed and the cavity is freely ventilated from outside. In thicker cavity walls, where the inner wall is 9 in. thick or over, this is not noticeable; but the $4\frac{1}{2}$ -in. skin quickly becomes warmed from within in cold weather, and creates a decided up-current of air in the cavity, drawing in fresh cool air from below, and continually losing heat in this way. The method of ventilation described later goes some way to remedy this.

(2) Quick drying of walls owing to ready admission of air to mortar. This makes it possible to get buildings ready for healthy occupation in considerably shorter time than usual.

(3) Liability to attack by frost when building, owing to similar reason.

(4) Economy in facing bricks owing to absence of headers ; also possibility of use of brick five courses to the foot with ordinary four-course backing without disturbance of bond.

Footings.

The 11-in. wall contains no more bricks than a 9-in. wall, and places no greater load on the foundations. It is therefore reasonable to give its base no greater spread—that is, 18 in., allowing one course of footings to be absorbed by the cavity. As the inner wall carries the bulk of the weight, the full spread should be preserved on this side, but, in order to save cutting, the courses between top of footings and bottom of cavity may be built out as shown by dotted lines (Fig. 1). Where the floor joists require a bearing block, footings may be formed on the inner face (Fig. 2).

Damp Course.

The cavity is often stopped on the damp-course, and alternatively is sometimes taken down as far as the footings; both practices are faulty. It must be remembered that the *theory* of the hollow wall is that dampness may penetrate the outer skin, but must stop there, and the *fact* is that some amount of moisture does so penetrate. Its natural course is downwards, and should the damp-course continue through both thicknesses moisture is there arrested in its downward course, and spreads to the inner wall or even to the ground-floor plate, which is usually bedded direct on the dampcourse. If, on the contrary, the cavity continues below the ground line, it may become charged with water percolating through from the soil. The best place to stop it is below the dampcourse, and at least one course above the ground, an angular cement fillet being formed and a few vertical joints left open for the escape of moisture (Figs. 1 and 2). A continuous bitumen dampcourse is best, as

slates $4\frac{1}{2}$ in. wide are too small to be economically suitable.

Openings.

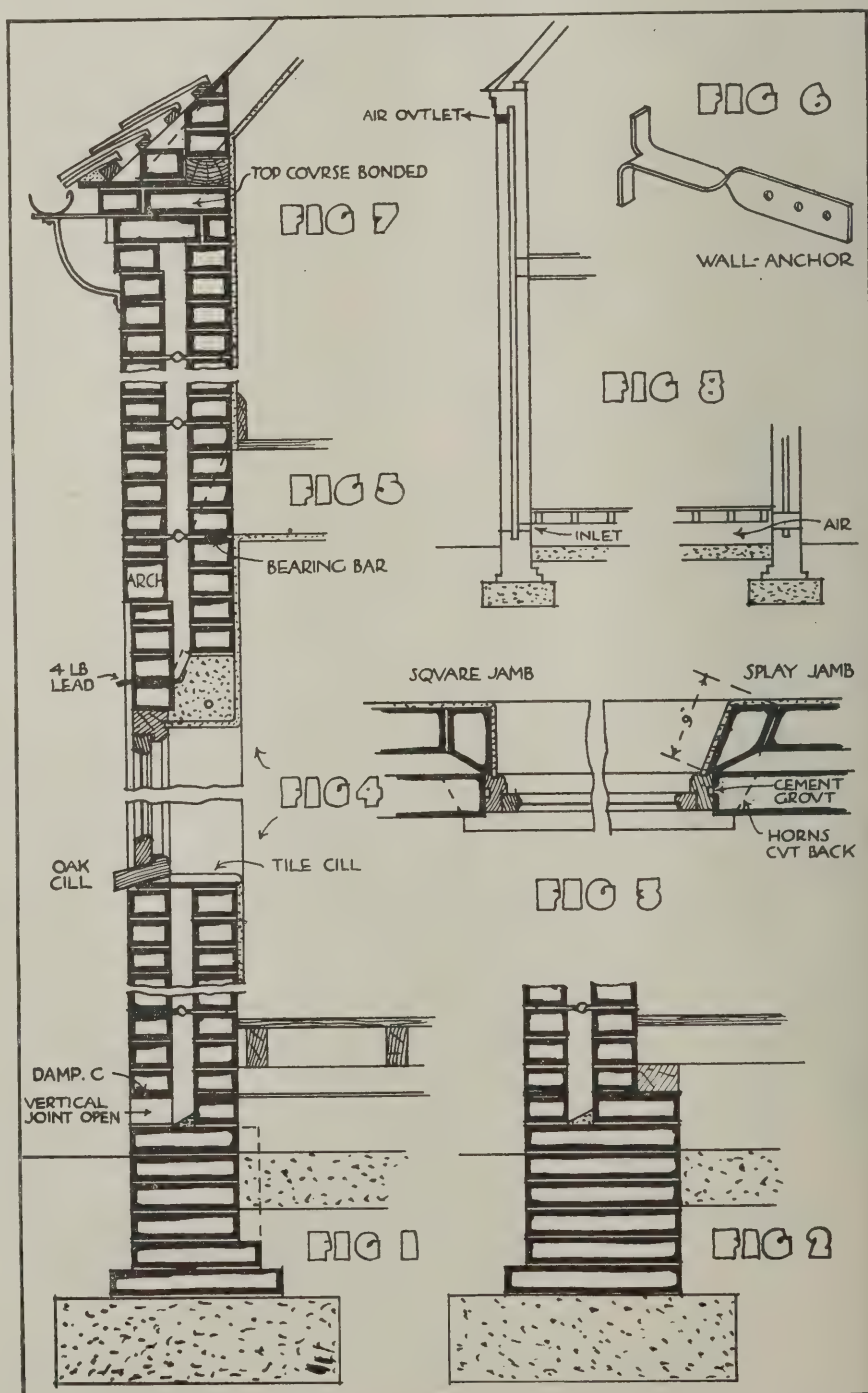
Door and window openings must be built solid at the jambs, but the point of contact should be reduced as much as possible, which may be done by clipping bricks as shown (Fig. 3). Frames penetrating the cavity should be avoided when practicable, a workable treatment at jamb, sill, and head being shown. The frame is grooved on back, and grouted in with cement from above when the brickwork has been built up. The horns of sill and head are left on (cut back as shown), and by these expedients the frame is firmly fixed. At the sill a course of flat tiles bedded in cement closes in the cavity, and the head is covered by a concrete lintel cast in position, a tilted board or fillet being temporarily fixed to keep the lead strip over the window head in place and preserve the cavity while casting (Fig. 4).

Floors.

The inner wall carries most of the weight, and should not be weakened by building in wood plates to support floor joists, as the whole of the wall above must rest on them, and when shrinkage occurs will settle and probably loosen the ties. A stout hoop-iron bearing bar should be run continuously through the wall to receive joist ends (Fig. 5), every third or fourth joist being spiked to a breeze brick built in to receive it, to give the requisite tie. A still better plan would be to use an American "wall anchor" (Fig. 6), but I have not succeeded in getting these in this country.

Eaves.

At the eaves the two skins should be united by building solid for a few courses, which may be done here without bad results, as the outer surface is protected by the roof projection. This ensures the roof load being partially borne by the outer thickness. A simple oversailing



enables the work to be bonded without much cutting or waste. (Fig. 7).

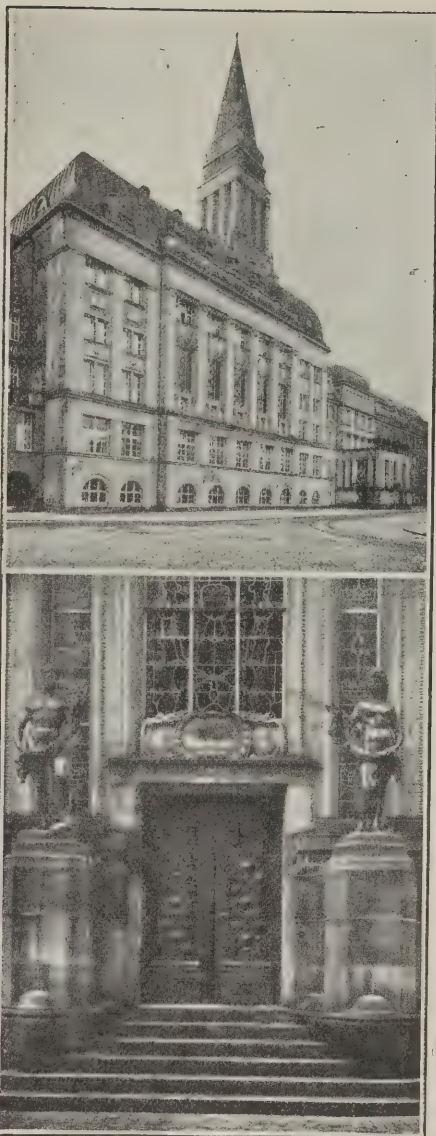
Ventilation of Cavity.

It is now generally admitted that fresh air circulation through the cavity is desirable, but certain disadvantages frequently entailed by direct ventilation have been mentioned. If, however, the inlets to the cavity are formed from within, below the floor space, and the outlets at the top, just beneath the solid over-sailing, two purposes are thereby served. The upcast current produced in the cavity creates a pull on the air below the floors, and greatly assists the usually sluggish ventilation here, by drawing in air from outside through the air bricks communicating with the floor space; and the indirect and consequently slower circulation so set up considerably retards the degree of heat-loss from the rooms. The shafts conducting air from outside to the floor space should be sealed off from the cavity with slates and cement (Fig. 8); and if these are formed (as they usually are) under window openings and the inlets to cavities intermediately, in the piers or plain wall faces, the desired object is achieved.

MAGAZINES AND REVIEWS.

"The Art Journal" contains a copiously illustrated article by Mr. Jourdain on "The Works of Robert Adam: Kedleston"; nothing, however, is said about the house itself and its remarkable plan, only about the furniture it contains, which, it appears, has been carefully preserved. It is, however, a very motley collection, much of it saying little, or perhaps a great deal too much, about the taste of the designer and his time. Some of the things—such as the gilt four-post bed, with its realistic palm-trees at the angles, and the carved wooden *torchere*, with the stem formed of three twisted snakes, whose heads make a tripod at the foot—are atrocious; others, especially the fire-grate which figures at the head of the article, are admirable, both in taste and design, and seem to belong to a different world. The chamber-organ case also is very good. The impression one gets is that Adam had no central ruling principle in his furniture design; he designed in two styles, one of them as good as the other is bad, and his name cannot in the least be accepted as a guarantee of good taste in furniture design. Mrs. Stuart Erskine contributes an article on "Some Flaxman Relics," containing some interesting information as to the sculptor's life, and illustrations of some of his works not generally known, among them the model for a seated statue of Telford, with a bas-relief of the Menai Bridge on the pedestal. It appears that Wedgwood, for whom Flaxman did so much beautiful work, was not at the outset in the least conscious that he had secured the co-operation of a man of genius, and spoke with indifference about the engagement of the artist; but he seems to have appreciated him in the end. A curious incident is the story of his offer to Flaxman of a book written by an Italian and dedicated "All'ombra di Flaxman," under the impression that the sculptor was already dead. Flaxman accepted both the book and the apology, and died five days after. "Chimney-pieces of the Early Georgian Period," by Mr. Francis Lenygon, is the opportunity for the publication of some fine examples.

The "Burlington Magazine" commences with an article on "The Decorator as Artist," the intent of which apparently



Detail of Principal Entrance.

NEW COUNCIL HOUSE, KIEL.
D. HERMANN BILLING, ARCHITECT.

is to recommend the work of Mr. Robert Vigors, whose special aim is to modernise some of the typical styles of interior decoration—Elizabethan, Louis Seize, Adam, etc.—retaining their general spirit but treating them in a way to harmonise better with modern life and habits. This is a more reasonable treatment than mere imitation; and the illustrations of interiors which he has treated look well. "Rajput Paintings," with some illustrations, is part of the craze which is just commencing for the semi-barbaric pictures of early Chinese and Indian artists. This will probably go on for some time now, and we shall be asked to believe that these works are far superior to the benighted Western Art of the nineteenth and present centuries. Without countenancing any such exaggeration, one may find the examples given of much interest in an archaeological sense, and we also agree with the recommendation made in another article, by Mr. Lionel Cust, that it would be well if all the treasures of Oriental art in London were collected into one museum, where they could be studied together, instead of being distributed over the British Museum and two departments of the Victoria and Albert Museum. But the value of Oriental art consists in decorative work and applied art, not in naive attempts at picture-painting.

In the "Nineteenth Century" Miss Gertrude Kingston revives a very old demand, in the words "Wanted: a Ministry of Fine Arts." The suggestion has been made in print over and over again. Miss Kingston gives one crucial instance of what happens in the present state of things. She wanted to buy "some pillars and fine old chimneys and fan-lights" that were being carted away from the houses in Great George Street, demolished by order of the Government. But on applying at the Office of Works (which she incorrectly calls the "Board of Works") she was told she must apply to the house-breaking contractor, as they were his perquisites. As she says, truly: Can one imagine such a thing occurring under a properly equipped Ministry of Fine Arts? Of course, we know that such a piece of negligence is a trifle compared with the far greater and more serious mistakes that are made in connection with London architecture, for want of there being a competent and constituted authority to look after them; but the incident is a very characteristic one, and was worth relating.

In "Scribner," under "The Field of Art," Mr. Bashford Dean writes an article on "The Armourer and his Art," which calls attention to the important position held in the mediæval and early Renaissance period by the armourers; and he draws attention to the fact that it was not only the business of the armourer to decorate the armour richly, but that he was to produce beauty in it without in any degree losing strength.

The "Moderne Bauformen," published at Stuttgart, occupies its February number entirely with illustrations of the new Council House at Kiel, of which Herr Billing, of Karlsruhe, is the architect. There is a great deal of merit in this building, though the architect seems to have made a too defiant attempt to be original by refusing all the usual refinements of an architecture based on Classic—putting square stone piers, with only a mere hint of a capital, in place of Classic forms. This avoids imitation no doubt, but produces a rather bald and uninviting architecture. We give two illustrations of the general view and the main entrance.

The "Architectural Record" includes a good article by Mr. M. Stapley on "The most excellent master Baldassare Peruzzi," an architect of the Italian Renaissance who hardly got the opportunities or the fame which his genius merited, though his name is permanently connected with two beautiful Roman palaces, the Massimi and the Farnesina, of which the latter used to be credited to Raphael, but the consensus of architectural historians is now in favour of Peruzzi's claim to it. Perhaps, however, the Albergati palace at Bologna may not unfairly be classed as superior to either; it is more robust and logical architecture than the Farnesina, the very flat pilaster Order on which is, after all, rather a conventional source of effect, while the Albergati depends entirely on the fine treatment of windows disposed symmetrically in a large surface of wall. An article by Mr. Cheney on "The American Academy in Rome" is of some interest as indicating the present feeling of the Americans in regard to the value of Roman study. The general conclusion seems to be that there are two centres of education for American architects—Paris for technique, Rome for culture—and that the intellectual culture of the architect has been hitherto rather neglected in America. In that case the new Academy at Rome may be a means of supplying this deficiency.

JOTTINGS FROM PARIS.

The Palace of Agriculture.

The proposed new Palace of Agriculture will probably not be built on the site of the Halle aux Vins, in virtue of the energetic protest of a mass meeting of about six thousand persons interested in the wine industry, who naturally hold that the demolition of their hall will be "deplorable from all points of view."

Organisation of Apprenticeship.

The subject of apprenticeship has been very earnestly discussed at a meeting of the Congress of Commercial and Industrial Groups. The view generally expressed was to the effect that the problem of apprenticeship should be taken in hand by chambers of commerce and other commercial and industrial associations, with State subventions, and that local and professional conditions should be respected.

African Army Monument.

The competition for designs for a monument to celebrate "the glory of the armies of Africa," to be erected at Algiers, has been decided in favour of M. Monestel, architect, and M. Maurice Favre, sculptor, who will work in collaboration. The jury consisted of MM. Cauvy, director of the Ecole des Beaux-Arts; Fourquet, professor at the same school; Rochegrosse, the painter; and Mulot, the sculptor.

M. Daumet's Successor.

The successor to M. Daumet at the Académie des Beaux-Arts is M. Edmond-Jean-Baptiste Paulin, who, born in Paris on September 10th, 1848, won the Grand Prix de Rome in 1875. He is, of course, a professor at the Ecole des Beaux-Arts, and an Officer of the Legion of Honour. He was awarded a *grand prix* at the universal exhibitions of 1889 and 1900, and for the former he designed the Chateau d'Eau and the palace of chemistry and mechanics.

International Housing Congress.

An international housing congress is to be held in Amsterdam in September, 1913. The programme, which has been recently adopted at a meeting of the permanent committee at Brussels, deals with town-planning, the housing of the working classes, and the sanitation of congested areas, etc., etc. On the proposition of the French delegates, the congress will collect information concerning the results obtained in various countries from experiments in municipal housing.

Mosaics at Montmartre.

Thanks to the bequest of 500,000 francs by an anonymous donor, an extensive scheme of mosaic decoration is to be applied to the chancel of the Church of the Sacred Heart at Montmartre. The work has been entrusted to M. Luc-Olivier Merson, who hopes to see its completion within about five years, which is perhaps rather an optimistic estimate in consideration of the fact that the surfaces that are to be covered represent 465 superficial metres.

Government Architects' Fees.

The French general Budget for 1912 provides that as from January 1st, 1913, the remuneration for architects engaged on works executed at the expense of the State shall not exceed five per cent. of

the cost of the contract. In cases in which the work is situated at a distance of more than twenty kilometres from the ordinary place of residence of the architect, expenses incurred in travelling and living away from home will be allowed. There are special scales for (1) works of maintenance and repair; (2) works of artistic character; and (3) works situated abroad.

Housing Betterment.

The housing question has become acute in Paris, and is receiving a good deal of attention. Accommodation for people of the clerk and artisan class is scarce, dear, and insalubrious, and the demand for cheap and healthy houses is becoming clamorous, and special legislation, empowering the city of Paris to build working-class dwellings is being demanded. It is at length realised that whilst in Belgium, England, Germany, and Italy, sanitary amelioration has made enormous strides, in France there has been absolute stagnation. The evils of overcrowding, and the insanitary character of old houses in which it takes place, are becoming painfully evident in the hospitals; and it is added that many of the proprietors of the slum dwellings are themselves poor, and lack the means of setting their houses in order, even where the will is good. Consequently the cost of reform is likely to fall upon the municipality or the State; and M. Brunet, municipal councillor, has demanded a loan of two hundred million francs (or not very far short of a million pounds sterling) for the construction of cheap dwellings, the designs for which, he proposes, shall be thrown open to competition. In the meantime, many industrious and ingenious persons are busying themselves with the old familiar calculations as to relative cost, rental, and accommodation; and already the fear is expressed that the necessity for cheapness may result in ugly buildings of monotonous uniformity of type when once the cheapest form of dwelling has been at length ascertained. A project that is being considered by the Chamber of Deputies provides for "the creation, in Paris and in communities of more than 100,000 inhabitants, of cheap dwellings." The interest on such schemes, as regards Paris, is to be limited to 2½ per cent., and that for provincial schemes is not to exceed 3 per cent.

Legislation and Labour Unrest.

Paris, like London, has its labour troubles. There, as here, in the spring the workman's fancy lightly turns to thoughts of strikes; and the masons, taking advantage of the busy period that is just coming into full swing, are demanding a nine-hours day and a revision of wages. The employers, for their part, are grumbling very heartily about the proposal that has been introduced into Parliament to limit the working day in certain industries to ten hours. In particular they point out that if in the building industry nobody is to be allowed to work for more than ten hours, that will, in some instances, necessarily imply a further reduction of two hours a day for certain classes of workmen, especially those employed in yards and workshops, whose output would otherwise be greater than could be dealt with in the reduced hours by those to whom the work passes on in due sequence. In the Chamber of Deputies, M. Vaillant has brought forward an amendment demanding an eight-hours day. It was defeated.

CORRESPONDENCE.

Ironwork in Holy Trinity Church, Sloane Square.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I notice in your issue for March 6th a photograph of the chancel gates in Holy Trinity Church, Chelsea, with a note stating that the metalwork was executed by Mr. H. Wilson. This is incorrect. All the ironwork for the chancel, the pulpit stairs, and the electric light fittings were designed by Mr. Sedding and carried out by my firm, Longden and Co., under Mr. Sedding's directions. Mr. Wilson designed some ironwork later, in other parts of the church.

H. LONGDEN.

3, Berners Street, Oxford Street, W.

[The number of craftsmen who were engaged in carrying out Sedding's scheme has made it difficult to dissociate the work of one from the other; hence our error, which we are glad to correct. The ironwork which Mr. Longden says was designed by Mr. Wilson "later" is presumably the outside railing, already illustrated in our columns. Mr. Wilson was also responsible, we believe, for the fine metalwork that screens the organ pipes.—Eds. A. and B. J.]

"A Century of Building": St Matthew's, Northampton.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your report of a paper on "A Century of Building" (in your issue of March 6th), read by Mr. Maurice B. Adams, occurs a rather curious mistake which leads up to, somewhat interesting coincidences. Amongst the works accredited to J. L. Pearson is the church of St. Matthew, Northampton, but this was designed and carried out entirely by the late M. H. Holding, A.R.I.B.A., who, strangely enough, was a pupil and an assistant in Pearson's office, so that in this case the usual course of events is reversed, the master here getting credit for the work of his pupil, although the former was, I believe, deceased years before the work was started.

Another slight and excusable error is, in reference to Godwin's works, Canon's Ashby, which is the home of the Drydens, and most interesting from an artistic and architectural point of view, is given as belonging to the Marquis of Northampton. It should have read "Castle Ashby," where Godwin designed the entrance lodges. The Town Hall, Northampton, is also mentioned as his work, and this again brings up the late M. H. Holding's name; for, when the extension of this building was undertaken, the design submitted for the front by him was selected and carried out, and the combination of the work of the two men is most successful. There are other houses in this town designed by Godwin, and, taking Rhinefelden and one at Dallingington built for Mr. Shuttleworth, in composition and in the proper use of materials they are fine examples—the latter especially, the sketch for which I believe I am right in saying, was evolved on a sheet of notepaper and in a railway train on one of his visits.

I am sending this correction as to St Matthew's as an old pupil of, and in fairness to the reputation of, the late Mr. Holding. I can vouch for the accuracy of my statement, as I had the pleasure of helping on the actual drawings. HERBERT NORMAN, Licentiate R.I.B.A.

PICTURE EXHIBITIONS.

The Dowdeswell Gallery.

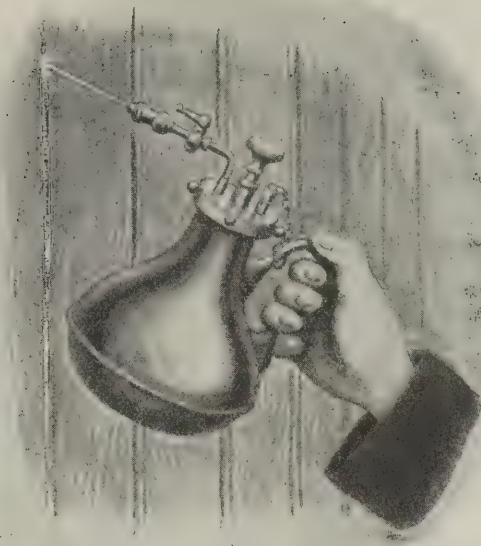
For the exhibition of "gardens and other watercolours" by Miss Beatrice Parsons, at the Dowdeswell Gallery in Bond Street, criticism is out of place; there is no room for any feeling but enthusiasm. This is either the second or third exhibition of Miss Parsons's work at this gallery, and her treatment of garden scenery, whether in regard to foreground detail or general pictorial effect, is simply perfect; we do not think anything could go beyond it; and it is hardly necessary to name any particular examples when all are so beautiful. The only difference between this and former exhibitions is that the artist has now for the first time, as far as we can recollect, made figures an important feature in some of her scenes. The Virgin and Child in the "Agnus Dei" picture forms a beautiful group; if the figures in the "Merrie England" picture are not quite so perfect as the garden scenery, they show every promise in this line of painting, a promise confirmed by two or three charming separate portraits of children. But as to the garden scenes there is no question that Miss Parsons is the first painter of the day in this class of subject. In the scenes in which portions of Winchester Cathedral come in the architecture is also very well treated.

The Leicester Gallery.

The modern tendency towards sketchiness in both landscape and figure painting receives more illustration than it generally does at the Leicester Gallery, in the two collections of work by Mr. F. Bramley and Mr. Peppercorn respectively. Mr. Bramley is, of course, an artist of no ordinary powers. Although the collection as a whole rather suggests sketches in oil, some of them are very effective as far as they go; "The Road," for instance, as a landscape, and the study of "Nelly" with her head nearly turned away from the spectator, seen against a background of foliage; there are other interesting landscape studies. In the exhibition of Mr. Peppercorn's works, "Evening near St. Just" is the best, and there is a fine sentiment in it.

The Goupil Gallery.

The owners of the Goupil Gallery have had the happy thought of making up a memorial exhibition of works by the late James Aumonier, one of the finest English landscape painters of our time, who certainly ought to have been elected a member of the Royal Academy, an honour which has been conferred on landscape-painters who, though more popular, are by no means his equals. It appears from the prefatory notice in the catalogue that his name, about the middle of his career, was down as a candidate for election at the Academy, but the honour was so long delayed that in 1902 he, with a very natural feeling of self-respect, withdrew his name from the list of candidates. The Academy have been unfortunate more than once in their neglect of landscape-painters who merited higher consideration, and it is not creditable to their judgment that Aumonier should have been left outside. The exhibition at the Goupil Gallery contains a great number of his smaller watercolour studies of landscape, and some, though perhaps not quite the best, of his larger and more important oil-paintings; the one which represents his art at its best, among those in the exhibition, is "Farm at Shepreth," a landscape exceedingly French in style;



PNEUMATIC SPRAYER FOR INSECT-DESTROYING SOLUTION BY R. SUMNER AND CO., LTD.

but there are other very fine oil paintings on a smaller scale. Aumonier, it appears, commenced his career as a designer for calico printing, his first attempts in painting being studies of foreground flowers; yet he never lapsed into being a foreground painter in landscape; on the contrary, his mature works are remarkable for their breadth of style and fine sense of landscape composition. He was a member of the Institute of Oil Painters, and was one of the small group of landscape painters, originally six in number, who used to give an annual exhibition of their works. He obtained a gold medal at the Paris Exhibition of 1889.

TRADE AND CRAFT.

Exterminating Insect Pests.

Builders very often, and architects occasionally, are required to deal with insect pests which, while they sometimes infest houses to such an extent as to render them positively uninhabitable, are always more or less of a disgusting nuisance, to which hitherto it has not been easy to oppose an effective remedy. To meet this difficulty, Messrs. R. Sumner and Co., Ltd., manufacturing chemists, 50A, Lord Street, Liverpool, have introduced a solution that instantly kills insects, and, what is equally important, they have devised an effective means of applying it. If bugs, fleas, cockroaches, etc., were not inaccessible in their lairs, their extermination would present no difficulty; but they cannot be got at by ordinary means, and so, behind woodwork, and in other concealed nooks and crannies, they increase and multiply in defiance of all ordinary efforts to dislodge them. Messrs. Sumner have devised a sprayer of pneumatic action, and having a special nozzle, with a star-shaped flow, from which liquid radiates for a distance of 5 ft. in all directions. The liquid, known as solution D, is said to consist of certain synthetic derivatives of coal-tar in combination with volatile and mineral oils. It is proved to be absolutely fatal to all forms of insect life; it destroys not only the insects, but their eggs. Wherever an insect can go the spray from this pneumatic instrument can follow; and on board ship, where the nuisance from

insect pests is often intolerable, it has been found entirely efficacious to bore a $\frac{3}{4}$ in. hole in the woodwork of an infested bulkhead and, by inserting the nozzle of the sprayer, reach every part of the interior with the insecticide, and thus free the otherwise inaccessible interior from every trace of vermin. The fluid is strongly disinfectant, and by means of a small tap its discharge can be regulated from a light spray to a strong stream. It should be of special value in hotels, hospitals, and similar institution. The fluid, it is stated, is harmless to woodwork or upholstery.

The Installation of 'Phones.

The Western Electric Company, Ltd., North Woolwich, London, E., have issued, as their "booklet 107," a set of most useful "Instructions for Installing Westophones, Interphones, and Single-line Telephones," illustrated with ten clearly and carefully drawn diagrams, showing complete details of all arrangements for connecting-up, etc. These are accompanied by directions which are set out in the simplest possible language, every operation, with the reasons for it, being fully and lucidly explained, as well as the working of the instruments after the installation has been completed. The booklet will be found invaluable to architects who wish to inform themselves upon every point in the installations which they specify, as well as by the specialists entrusted with the actual work.

A Hertfordshire Bacon-Curing Factory.

The preliminary arrangements in connection with the formation of a bacon-curing establishment at Hitchin have been completed, and the plans and specifications for the new undertaking, which have been prepared by Mr. Loudon M. Douglas, F.R.S.E., of 3, Lauder Road, Edinburgh, who is technical adviser to the society, are now ready, and will be issued forthwith to the various contractors who are desirous of tendering for the work of construction. The undertaking, which owes its initiation so largely to Lord Lucas, will be known as the Herts and Beds Bacon Factory. In ordinary circumstances the factory should be completed in about six months' time.

SOCIETIES AND INSTITUTIONS.

ARCHITECTURAL ASSOCIATION,

House List.

The following are the Council's nominations for the House List for the Session 1912-1913.—President, Gerald C. Horsley; vice-presidents, W. Curtis Green, Maurice E. Webb; hon. secretary, H. A. Hall; hon. librarian, W. H. Ward; hon. editor, A.A. Journal, P. Cart de Lafontaine; hon. treasurer, Arthur Keen; council, A. T. Bolton, C. C. Brewer, H. P. Burke-Downing, F. C. Eden, G. L. Elkington, Stanley Hamp, A. G. Horsnell, Geoffrey Lucas, Winton Newman, T. Fyfe, W. G. Newton, A. G. R. Mackenzie, W. J. Tapper, A. Gilbert Scott, J. Alan Slater.

DEVON AND EXETER ARCHITECTURAL SOCIETY.

Annual Meeting at Exeter.

The annual meeting of this society, which embraces the counties of Devon and Cornwall, was held at the Half Moon Hotel Exeter the President, Mr. James Jerman, F.R.I.B.A., of Exeter, in the chair.

The annual report was presented by the hon. secretary, Mr. Allan J. Pinn, and the balance sheet by the hon. treasurer, Mr. S. Dobell. The retiring president, Mr. James Jerman, having been thanked for his address and also for the able manner in which he had discharged the duties of his office during the past year, the meeting then proceeded to elect the officers for the ensuing year, as follows: Mr. E. Coath-Adams, M.S.A. (Plymouth), President; Mr. J. A. Lucas, A.R.I.B.A. (Exeter), Vice-President; Messrs. J. M. Pinn, L. F. Tonar, T. A. Andrews (Exeter), R. H. Arthur (Plymouth) to fill vacancies on the Council of those retiring, as well as those remaining in offices—viz., Mr. H. L. Thornely, F.R.I.B.A., Mr. Sampson Hill (Redruth), and the two past presidents, Messrs. W. H. May, M.S.A. (Plymouth), and James Jerman, F.R.I.B.A. (Exeter), Mr. S. Dobell, hon. treasurer, and Mr. Allan J. Pinn, A.R.I.B.A., hon. secretary.

Subsequently the members lunched together, and during the day the visiting members were conducted round the city, among the places visited being the Rougemont Grounds, the Law Library, the Bishop's Palace, the Cathedral, College Hall, Guildhall, and several churches and mediæval buildings.

In the annual report it was stated that after the removal of six names, one by death and five by resignation, the roll of members now stands at eighty-four. It is recorded that when the new by-laws for the city of Exeter were adopted, the City Council gracefully acknowledged the services rendered by members of the Society in their revision. The president and several members of the society were present at the ninth International Congress of Architects, which was held at Rome last autumn.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

Scottish Renaissance Architecture.

A general meeting of this society was held on March 7th at the Leeds Institute, the President (Mr. Sydney D. Kitson, M.A., F.R.I.B.A.) in the chair. A lecture on "Scottish Renaissance Architecture" was given by Mr. Laurence Weaver, F.S.A., Hon. A.R.I.B.A. A series of slides showing plans of houses and castles, illustrated the fact that the towers formed their keynote—unlike the English plan, which developed from the hall. It was pointed out that the Scottish Renaissance

was entirely based on French influence, owing to the political connection between the two countries; whereas in England the influence of Italy and the Netherlands was general. The Scottish Renaissance was much later than the English, and the tenacity of the Old Baronial style is remarkable.

NORTHAMPTON ASSOCIATION OF ARCHITECTS.

This association was formed in March, 1911, and has now become allied to the Royal Institute. The first annual general meeting has recently been held, when the treasurer was able to present a satisfactory balance sheet. After a vote of thanks for past services, the president, Mr. J. A. Gotch, F.R.I.B.A., the vice-president, Mr. Sidney F. Harris, F.R.I.B.A., and the council and hon. secretary were re-elected. During the past session monthly meetings have been held, when papers have been read and afterwards fully discussed. It is proposed to organise a few summer excursions, and to re-assemble for the monthly meetings in the autumn.—HERBERT NORMAN, Hon. Secretary.

YORK AND YORKSHIRE ARCHITECTURAL SOCIETY.

A paper on "Sketching" was read before the above Society last week, by Mr. William Whitehead, A.R.I.B.A., of Leeds. Mr. Whitehead, in dealing with the subject, divided it into the following sections: The uses of sketching, the mediums and styles, composition, and what to sketch. There were times, he said, in everybody's life when they desired to put some of these impressions and ideas into more material form. Something more than mechanical draughtsmanship was necessary to delineate the very numerous and varied detail of modern times for the guidance of craftsman and workman. To attain this degree of proficiency in the various mediums, nothing was more helpful than sketching. Other advantages to be claimed for sketching were familiarity with proportion, detail, and construction and perspective.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

"Architects of the Stuart Period" was the title of a lecture delivered to the members of the Birmingham Architectural Association last week by Mr. Mervyn E. Macartney, F.R.I.B.A., F.S.A., architect to the Dean and Chapter of St. Paul's Cathedral, and to Durham Cathedral.

International Smoke Abatement Exhibition.

An exhibition will be opened on Saturday, March 23rd, at the Agricultural Hall, Islington, N., under the auspices of the Coal Smoke Abatement Society. The exhibition will comprise all the latest appliances for the use of smokeless fuels both in the home and in the factory, and there will be a large and attractive display of gas appliances for cooking; for hot water supply; for the heating of houses, shops, factories, churches, and other public buildings; and for furnace work. Every afternoon and evening demonstrations of cooking by gas will be given, with practical hints in the economising of gas, and in the most effective utilisation of cookers, grillers, hot-plates, etc. Tickets of admission will be supplied by the Gas Light and Coke Company to any of their consumers who will apply at any of their offices.

COMPETITIONS.

LIST OF COMPETITIONS OPEN.

MARCH 25TH. SCHOOL, COLCHESTER.—The Borough of Colchester Education Committee invite architects practising within the borough to send in Competitive Plans for a School for about 750 children to be erected on a site in Hamilton Road, Colchester. Plans must be delivered by 12 o'clock noon on March 25th. Apply to Ernest H. Bultitude, Clerk, Education Offices, 8, East Stockwell Street, Colchester.

MARCH 31ST. NEW PARLIAMENT BUILDINGS, WINNIPEG.—The date formerly announced for the close of this competition has been extended to March 31st.

APRIL 20TH. BIRMINGHAM BLUE COAT SCHOOL.—Competition strictly limited to Birmingham architects. In a preliminary competition, three designs will be selected, and the authors will be paid £50 each to develop and redraw their plans to a larger scale, showing further details. In the event of the Governors failing to proceed with the second competition, the authors of the three designs will be paid £25 each. Assessors, Mr. G. H. Hunt, F.R.I.B.A., of London, and Mr. Charles E. Bateman, F.R.I.B.A., hon. consulting archt. to the Governors. Drawings to be delivered by mid-day of April 20th to Mr. William E. Bolton, Secretary, The Blue Coat School, Birmingham.

MAY 1ST. PUBLIC BATHS, WOMBWELL, YORKS.—Wombwell U.D.C. invite designs for swimming-baths to be erected in Hough Lane. Premiums, £40, £30, and £20. Stamped and addressed foolscap envelope to W. Quest, surveyor to the Council, Town Hall, Wombwell.

MAY 15TH. COUNCIL OFFICES, PORTLAND.—Portland U.D.C. offer premiums of £50 and £10 respectively for first and second designs. Particulars (deposit 10s. 6d., returnable) from R. A. Colenutt, Clerk to the Council, Offices, New Road, Portland. [The date has been extended from that formerly announced.]

JUNE 28TH. TOWN PLANNING. HALE.—Premiums of £50 and £25 are offered for a town-planning scheme.—Address Council Offices, Hale, Cheshire.

JUNE 1ST. INSTITUTE, NETHERTON DUNFERMLINE.—Cost not to exceed £7000. Premiums, £20, £15, and £10. Assessor Mr. E. A. Jamieson. Apply, Secretary Carnegie Trust, Abbot Street, Dunfermline.

JUNE 30TH. MUNICIPAL BUILDINGS PADIHAM.—Designs for town hall, baths etc., are invited. Premiums of £40 and £20 are offered. Address, J. Gregson A.M.Inst.C.E., Surveyor's Office, Padiham.

AUGUST 30TH. THE HENRY SAXON SNELL ESSAY.—The Henry Saxon Snell prize of fifty guineas and silver medal of the Royal Sanitary Institute is offered for an essay on "Suggestions for Improvements in the Ventilating, Lighting, Heating, and Water Supply Appliances and Fittings for an Operating Room and its accessory rooms for a General Hospital of 400 Beds (no Students)." Essays (in which two competitors of different professions or crafts may join) to be delivered before 4 p.m., August 30th, to the Secretary Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., from whom full particulars may be obtained.

THE ARCHITECTS' & BUILDERS' JOURNAL

WEDNESDAY,
MARCH 27th, 1912.

Volume XXXV.

No. 897



DETAIL OF AN OLD HOUSE IN BROAD STREET,
HYTHE, KENT.



[Photo: News Illustrations Co.]

MODEL OF THE KING EDWARD MEMORIAL, TO BE ERECTED IN THE GREEN PARK, LONDON.

BERTRAM MACKENNAL, A.R.A., SCULPTOR. E. L. LUTYENS, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

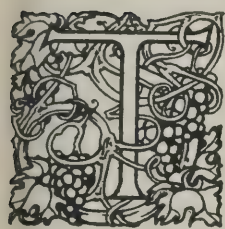
MARCH 27th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 897.

NOTE : *The List of Contents will be found on page IV. of the front advertisements.*

The King Edward VII. Memorial.



HE site for the memorial to King Edward VII. was definitely fixed at the meeting of the Memorial Fund Committee held on March 21st. The site bordering on Piccadilly, with the memorial facing southward towards the Queen Victoria Memorial, was agreed upon with only four dissentients, and the architect and sculptor are to be commissioned to carry out the work according to the design shown in the model, of which we give an illustration on the opposite page. The result, however, was not arrived at without a good deal of adverse criticism, some of which was not without point.

One of the objections was that the whole monument, while placed near to Piccadilly, would turn its back to that main thoroughfare. The objection, as put by Sir Squire Bancroft, that the statue of the King was turned with its back to Piccadilly, was a little over-stated, as the monument will not have that effect; the architectural erection which forms its centre will be the background to the portrait statue, and one of the accessory groups of sculpture will face Piccadilly. The monument is, in fact, and all-round one, with an important sculptural group on each face. We quite agree that, as it is to be placed in that position, the statue of the King should face towards the Queen Victoria Memorial. Another objection made to the site is that the space is not adequate, as to appearance, for a monument on so large a scale. The whole erection will be 43 ft. high, 21 ft. wide, and 16 ft. deep. For a monument on that scale there ought to be a fairly large square space, treated in a decorative manner, surrounding it. For this some amount of land would have to be taken off the Green Park. It was intimated that any proposal to do this would be likely to meet with opposition in Parliament, as an encroachment on the rights of the public. Mr. Lawson, while in opposition to the scheme generally, made light of his objection, saying that "in this curious House of Commons there would be an objection to anything," which is probably true. But the idea of objecting to take some pace from the green of the Park on the ground of public rights is absurd; it would not be ground taken from the public enjoyment, it would only be ground differently treated in order to give the best effect to the memorial; and that would surely be an addition to the public enjoyment, not an interference with it. And to get the best effect of so large a monument that ought to be done; otherwise it will look too large for its position. A monument on that scale requires some open space round it.

Though the objections to the site have been exaggerated, it must be admitted that it is not entirely satisfactory. It is spoken of as facing the Queen Victoria Memorial, but to face the front of one monument towards the flank of another is not a true form of axiality. We are still of opinion that the finest and most suitable site would have been at the east end of the Victoria Memorial Road, facing west towards the Victoria Memorial and on the same central axis with it. The new building at the east end of the Road would then have formed a fine architectural background to the monument, and there would have been a suitability, both of architectural effect and of association, in having the two monuments facing each other on the axis of the road. The

roadway is quite wide enough for that position, both in an artistic and in a practical sense, and we can only regret that this site has not been adopted.

As for the monument itself, as far as one can judge from a model, it appears to deserve nothing but praise, and it is to be hoped that after its exhibition we shall not hear any more of the ignorant grumbling that has been made as to the appointment of one of the ablest sculptors of the day, of whose works and of whose claims to respect his amateur critics appeared to know nothing. And the satisfactory character of the design is partly due to the fact that in this case at least the Government have adopted the practice, always adopted for public monuments in France, of appointing an architect to collaborate with the sculptor and to design the architectural basis of the work. The treatment of the pedestal, and of the architectural centre with which the figures are grouped, is a very important element in the total effect of a monument, and it is one which few sculptors understand. Had the same course been taken with the Queen Victoria Memorial the result would probably have been much more satisfactory than it is.

The idea, in a monument to an eminent person, of accompanying the portrait figure by emblematical figures symbolising certain qualities or ideas having relation to the central figure is an essentially French one, and has been constantly employed for public monuments in France for many years. Generally speaking, the French artists content themselves with a portrait bust only, and thus avoid the difficulty of representing modern costume, which is so unsuitable for sculpture; and they are then free to treat the subsidiary symbolical figures in a purely abstract and sculptural manner. Thus, in M. Larche's charming monument to Corot, we have only the bust of the painter on a pedestal crowned with a wreath presented to him by a nude nymph who seems to symbolise the spirit of his own woodland scenery. This method of treatment has been adopted in one beautiful English work, Mr. Gilbert's monument to Fawcett, which stands in a dark corner of the nave at Westminster, where few people ever see it. This consists of a medallion head of Fawcett in relief, and a row of seven small bronze figures beneath, representing various virtues; both a poetical and a sculptural manner of treating a monument. We are rather inclined to think that both the Victoria and the Edward VII. monument designs would have been better if the portraits had been busts only; but in the case of the latter the sculptor has the advantage of the long ceremonial robe, which is capable of broad and effective treatment in sculpture; unlike the realistic frock-coat of ordinary modern dress, which is hopeless for sculptural effect, as many English memorial statues unhappily testify.

The idea of the design is to give the figure of the late King in front; on the right a seated figure symbolical of hospital work, and bearing the snake-wreath staff of Æsculapius; on the left a seated figure representing Peace, with appropriate emblems; at the back a bronze group representing "Arbitration quelling Strife," which one hopes may be symbolical of the future as well as of the past. No one will deny that King Edward VII. fully earned the right to these symbolical groups on his monument. The St. George and the Dragon, which makes an effective terminal group, one may suppose to refer to England at large, giving a specially national character to the memorial. Above the side figures are the Royal Arms in bronze and stone. The architectural

portion of the monument will be in Portland stone, the sculpture in bronze.

We may congratulate Mr. Lutyens on his pedestal, which is exceedingly well treated in a thoroughly masonic spirit, and the sculpture sits well upon its bases, giving an expression of unity and concentration to the whole work, which promises to be something far superior to the general run of public monuments in this country.

Cheap Cottages.

ANOTHER correspondent of the "Spectator," we are glad to see, has written a sensible and practical letter to protest against the proposals for tarred wooden cottages as country dwellings. He says, as we did, that in new buildings we should take advantage of modern knowledge as to fireproof materials and reinforced concrete, "which last would enable us to build sound walls much less ponderous than of old." We may quote another passage from Mr. Robinson's letter:—

"As to the cottages of the future, where several are required a new departure should be made in their construction. The great enemy is the sloping roof with the vast quantity of timber it entails. A better way would be to build the cottages two storeys high, with fireproof floors and a flat roof, with a very gentle rise in the middle to throw the water off, and a low parapet all round, and each upper cottage with a separate entrance in the Italian way by means of an outside staircase. In this way we should secure in a not expensive way cottages fireproof, vermin-proof, rot-proof, and sanitary.

"The sloping roof of tiles and slates, unless done in the best way, which a cottage cannot afford, is a continual cause of trouble and expense."

This is the common sense of the matter, but, of course, the editor of the "Spectator" is "profoundly in disagreement" with the correspondent who, with evidently better knowledge, has presumed to condemn his suggestions.

Christchurch Priory.

IT appears that there is to be a rearrangement of the interior of the fine Priory Church of Christchurch, Hants, under the direction of Mr. T. G. Jackson, and that the stone choir screen, the removal of which to another position has been urged at different times, is to remain where it is, and to become the reredos of the parish church, a choir and sanctuary being formed between it and the congregation. It is not quite clear from the account in the "Bournemouth Guardian" what is to be done with the portion of the building east of the screen. We conclude that it is to be left outside of the ritual church and to remain merely as a piece of architecture unconnected with the use of the church for worship. The former proposals to remove the screen arose from the complaint that it shut out the east end of the church too completely from the congregation; so that to make it a reredos, without interfering with its position, is probably the best thing to do with it. It is stated also that the transept galleries are to be removed. There is (or was) a large and fine organ in the south transept gallery; what is to be done with that?

The Indian Victoria Memorial.

IT appears that Sir W. Emerson's great building, which was to be erected at Calcutta as a memorial to Queen Victoria, is proving a kind of white elephant which the authorities are now anxious to get rid of. There was some unfortunate trouble in the first instance with the foundations, which, as far as we remember, was by no means the fault of the architect; and apparently the building has never got beyond the basement storey. Now that the seat of the capital is to be removed to Delhi, it seems to be considered doubtful whether Calcutta can make any use of such an immense building, and whether the money required for completing it could not be better employed in the promotion of education. This may be thought to be common

sense, but it is a rather discreditable sequel to a great monumental scheme to treat it merely as an economical question; and it is not a way of doing honour to the memory of the first Empress of India. Surely it would be better, and more honourable to the Empire, to carry out the monumental building from the same design at Delhi; the new capital, and put up with the loss incurred on the foundations of the Calcutta site. There is something very inglorious in the idea of the Indian Government having begun a great monument to the late Empress, and being too parsimonious to complete it; and the incident is not calculated to raise our reputation with the native princes of India.

The Institute Prizes and Studentships : 1913.

THE scheme has just been issued of the students' competition subjects which will be adjudicated by the Institute of Architects at the close of the present year. We notice one important change in regard to the Essay Prize; instead of a special subject being appointed the prize is to be awarded for the best essay on a subject of architectural interest chosen by each competitor for himself. The essay prize has hitherto been rather a failure as regards the response to it; sometimes there has been no response, sometimes only one or two essays. Apparently it is thought that to leave the choice of subject to the competitors themselves may lead to a better response. Perhaps it may; often a young man has some subject which interests himself and on which he has collected some information and he may find it much easier and pleasanter to write an essay on that than on a subject chosen for him. The arrangement will rather increase the difficulty of making a comparison of merit; but in other respects it seems a good idea.

The subject for the Soane Medallion is "A Terminal Railway Station"; a very good subject, in the treatment of which it is to be hoped that some of the competitors may strike out some fine and effective idea for the architectural treatment of a large railway station façade—something which is obviously a railway station and could be nothing else, and which would architecturally symbolise the importance of a great railway line. The characteristic treatment of railway station façades has in practice been rather interfered with by the common requirement of a large hotel in connexion with a railway station, which is generally placed in front, so that the station façade becomes merely one more hotel, with little to differentiate it from an hotel in any other position.

For the Tite Prize the subject is "The Façade of a Royal Palace in a City," approached by a wide avenue, with three carriage entrances to an assumed interior courtyard; the façade to be 300 ft. long and four storeys high. Something fine ought to be made out of this.

The Grissell Medal (which is given specially for constructional work) is to be awarded for the best design for "A Riding School constructed of steel with the sides and roof partially glazed." The walls are to be filled in between the steel framing with brick or other fire-resisting material and the steelwork of the roof and walls to be exposed to view. There is room in such a scheme for experiments in design as well as in construction. If the competitors could get hold of illustrations of the "Palais des Arts Libéraux" in the 1889 Paris Exhibition, which was constructed much in the way here proposed, they would find a good deal of useful suggestion in the treatment of the same general problem by one of the ablest French architects of the day.

The Basilica Plan for Churches.

IT is rather a singular coincidence that, while we are printing in another column a paper ("Architecture Considered in Relation to Music") in which the basilica type of church plan is recommended as affording the best plan for modern worship, in place of the Gothic plan, wit-

the long chancel, an account reaches us of a church on that plan just about to be erected in Bradford, from the design of Mr. G. S. Nicol, of Birmingham. It is described as providing "a large uninterrupted space for a congregation, with no break in the architectural lines to distract attention from the altar, which is enshrined at the east end in a semi-circular and semi-domed apse." This appears to be practically the Latin basilica plan, only that the description does not say whether the nave is divided up by arcades or not. Nor does it state how the choir and organ are to be placed, which is a practical point of some interest in church planning. But we are rather inclined to think that this adoption of the basilica form of plan for modern churches is likely to be considerably extended in the future.

Iron versus Stone Bridges.

UNDER this heading a Cumberland paper publishes a report of a meeting of the Penrith Rural District Council, when the subject of new bridges in the district was discussed, with the contempt usually shown in such discussions for any considerations but those of immediate economy of construction. The Council wish to build iron bridges all over their district wherever new bridges are required; and in reference to a protest which had apparently been made by Canon Rawnsley on the subject, one speaker observed that "they did not care about pleasing artistic faddists or antiquarian cranks," the kind of compliments usually passed upon those who have some regard of the beauty of a district. The Council do not seem to be aware, and probably do not care, that in substituting iron for stone bridges they are taking the best way to disfigure the country. Nor is the boasted economy a real one, except for the moment, for a well-built stone bridge, besides looking much better in a country landscape than an iron one, will last a longer, and require no painting or repairs.

"No Right to Dictate."

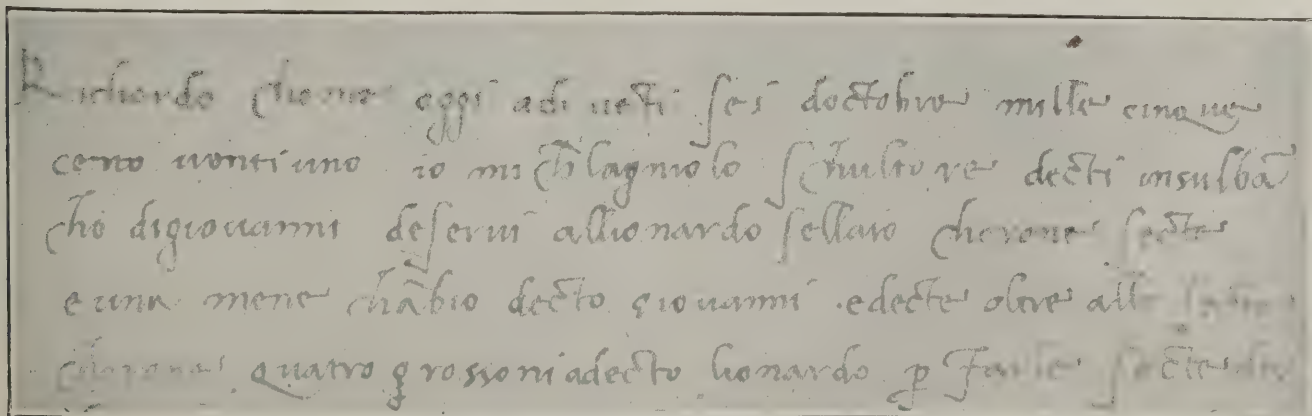
IN the conditions of the competition arranged by the Warrington Education Committee for designs for a new Council School at Oakwood Avenue, no provision was made for the appointment of a professional assessor. This serious omission was promptly pointed out by the Manchester Society of Architects, but the Sites and Buildings Committee declined to alter the conditions. When, last week, the minute relating to the case came up for discussion by the Education Committee, an amendment was moved to the effect that the matter should be referred back, "on the ground that non-compliance with the society's recommendations would debar the cream of the profession from competing." The chairman of the Sites and Buildings Committee said that "the society had no right to dictate to the committee as to what they should do," and the amendment was lost. These high-sounding and familiar catch-phrases are usually very deadly. Nobody thinks of analysing them, and so they pass for authoritative and, indeed, axiomatic truth, to which opposition is vain, if not wicked. Take this specimen—that "the society had no right to

dictate to the committee." What, precisely, does it mean? It involves several pure assumptions or insinuations; as (1) that the society had assumed a domineering attitude, and must be put in its place with the reminder that We, not ye, are the final authority in this matter; (2) that the society had ever assumed any right in this sense; and (3) that the society really had no *locus standi* in these high matters, and should not have the effrontery to intervene; (4) that the committee is too august a body to tolerate such interference; (5) that, even assuming, for the sake of argument, the possibility that the committee could err in tactics, the fact that the error was pointed out by the society was ample justification for persisting in it. As to (1) there can be no doubt that the society approached the subject with all due regard for the customary forms of courtesy, and did not make the egregious mistake of assuming a dictatorial air, or (2) any right to dictate or command. Regarding (3) it is surely superfluous to claim that the society has every right to safeguard the interests of its members, and (4) that no committee, howsoever august, should affect to be as unapproachable as the Grand Llama or as infallible as the Pope; nor (5) as stiff-necked and implacable as the Pharaoh of the plagues. The temporary gratification of the act of standing on one's dignity can be too dearly bought. The principle involved is well worth a struggle, and so generally recognised that it is surprising that at this time of day any public body should oppose it. The appointment of an independent assessor is as advantageous to the organisers of a competition as it is to the competitors, relieving the former of a weight of responsibility which, as ordinarily constituted, they can seldom or never safely assume, and to the latter giving assurance that their work will be professionally adjudicated upon. The "right to dictate" is not claimed; the right to protest is indefeasible.

Autographs of Great Painters.

AN exhibition of extraordinary interest is to be seen in the outer room of the Leicester Gallery at present, being a collection of a number of complete letters by eminent artists, from Pollajuolo to Millais; not mere signatures, but complete letters, some of them of great interest. Of twenty-one of the artists represented here, there is no autograph even in the British Museum.

One of course looks with considerable interest at the mere handwriting as characteristic of times and personalities. A general look through the collection shows at once that the Italians of the Renaissance wrote the finest and most artistic hands; the French of the later Renaissance come next, and the English painters of the eighteenth and nineteenth centuries are the poorest. The contrast between their writing and that of the Renaissance Italians is rather painful. In the latter we see the work of men who would make even a letter a work of art; in the English letters, mostly of later date, there is nothing to admire in the writing at all for its own sake; it merely gives the information required, and all one can remark is that some hands are more or less legible than others. Among the Italian



SPECIMEN OF MICHELANGELO'S HANDWRITING

etters the single example by Raphael is a perfect gem of delicate, finished, and artistic writing; with all its finish it is quite free and flowing, and seems to be the artist's natural style of penmanship, not a neat copy made for a special occasion. The contrast between this and Michelangelo's writing is curiously characteristic of the two men; Raphael's full of delicate grace, Michelangelo's robust, upright, decisive in character, and written with a much thicker pen than Raphael's. We show a reproduction of one of the Michelangelo specimens, from the catalogue, in which a good many facsimiles are given, so that it becomes a document of some value.

Two of the most interesting letters in the collection are two by Rubens, not remarkable for their calligraphy, but for the evidence they give of Rubens's general interest in contemporary life and politics; one would take them, in fact, to be the letters of a statesman rather than a painter. It is noticeable that both letters are in Italian; a letter by Nicolas Poussin, dated 12 years later than Rubens's, is also in Italian. Why do we find a Dutch and a French painter both writing in Italian? It looks as if, in the seventeenth century, Italian was the language [of intercommunication for artists, just as French has become the language of diplomatic intercourse.

One of the most interesting letters is one by J. F. Millet, dated June 1st, 1838 (he was then 22 years of age), in regard to his having been unsuccessful for the Prix de Rome, and having almost given up the idea of trying again, but he had reconsidered this: "Why should I renounce the pleasure of dreaming among those beautiful ruins where we shall see, walking in the twilight, the long-draped majestic forms coming again to think over the affairs of the Senate, with one of these forms conducting us?" This is accompanied by a sketch showing a long-robed Senator expounding the ruins of Rome to Millet and a fellow-student. He never obtained the Prix de Rome, having been told the next year (practically) that Roux was to have it, but that he would undoubtedly have it the year following. Millet did not care to go on competing for a prize which no doubt seemed to him to be too dependent on arrangement. Had he ever gone to the Villa Medici, probably his whole career would have been altered and we should never have had "The Sower" or "The Angelus"; but it is possible that we might have had something still better. Millet's little-known early pictures, before he took to painting rustic life, are artistically the best things he did. To return to the matter of handwriting, by the way, it may be observed that Millet's writing is exceedingly bad and untidy, and has not the slightest artistic character.

ARCHITECTURE CONSIDERED IN RELATION TO MUSIC.

BY H. H. STATHAM, F.R.I.B.A.

WHEN Mr. Worthington was kind enough to invite me to read a paper before the Manchester Society of Architects, he suggested as the subject "Architecture and Music." I thought that rather too vague, and I subsequently found the title was put down as, I think, "The Construction of Buildings for Music." That is a little too exclusively practical, and I prefer to regard my subject as "Architecture considered in relation to Music," as that leaves me the opportunity of saying a few words, to begin with, on the æsthetic resemblances between architecture and music. It is a parallel which must not be pushed too far, but there is really something of interest in it, not altogether uninteresting.

The most essential resemblance between architecture and music is that they are both arts which deal with abstract qualities of proportion and balance of parts, not with direct imitation of nature. That is the main element in which they differ from sculpture and painting. The objects of painting and sculpture go of course a great deal further than the imitation of nature, but they are based on that; they are the expression of design and of sentiment in terms of natural

forms, so that they may be said to be physical arts. Architecture and music are based upon qualities which underlie the physical forms, on line and proportion as abstract qualities, so that they may be called metaphysical arts. Music is line and proportion expressed in time; architecture is line and proportion expressed in space. The great difference in our appreciation of design in the two arts—and it is rather a curious one to consider—is that we can see and grasp the architectural design and its proportions at once, but we can only grasp the proportions of musical design by an effort of memory. If you can imagine a man with a good ear for tone but absolutely without memory, that man could never appreciate any musical composition at all, because he would only be conscious of the sound made at the moment. The musical compositions of the great composers are built up with as strict regard to the proportion and relation of the successive parts as an architectural composition is; but we are only conscious of that proportion, at any given moment of sound, by the recollection of what preceded it. It is as if you had to judge an architectural elevation by looking at it through a very narrow slit in a screen, and having the drawing slowly drawn past in front of the screen.

A quality which the two arts have in common is that of rhythm, the succession of impulses at exactly equal intervals, which can occur either in space or in time. But in music rhythm is a much more inherent quality than in architecture, for the very existence of musical tones depends upon the rhythmical succession of the vibrations. If you strike a table, say, with a hammer, if you could see the vibrations of air caused by the blow, which are in fact the sound, you would find that they form an irregular bunch, with no rule in their succession; but if you produce a musical sound by drawing a violin bow across a string, the vibrations will be in a regular succession of equally spaced periods. There is no phenomenon similar to that in connection with sight; but there is a comparison possible between music and architecture, and an instructive one, if you compare rhythm on a larger scale. All musical compositions which are stately and grand in expression are marked by a regular recurrence of accent at equal periods of time; and the same is true of architecture; stateliness and monumental expression can hardly exist in architecture without symmetrical spacing of parts at equal distances in space.

There is another point in regard to which music and architecture may be compared in a sense which is not generally recognised. The distinction between concords and discords in music is entirely a matter of numerical proportion in the rate of vibrations. Two notes form what is recognised by our ears as a concord when their rates of vibration per second are in comparatively simple ratios. In two notes an octave apart, which is the most complete concord there is, the respective vibrations are as 1 to 2; in the interval of a fifth, which is the next most complete, they are as 2 to 3; in the interval of a third they are as 3 to 4. When you get to less simple ratios than that, the combination ceases to be regarded as a concord. All people have not naturally the perception of the minute differences of pitch which mark off a complete from an incomplete concord—those are the people who cannot sing in tune; but the perception may be very much improved by practice; pianoforte tuners, for instance, who are always at it, develop an exceedingly sensitive ear for intervals. Most eminent musicians have the perception of pitch very completely. One of the most remarkable instances ever heard of was related of the late Sir Frederick Ouseley. He had been abroad for two or three months, and on revisiting the organ, I think at York Minster, which he had been in the habit of playing on, as soon as he touched it, he said to the organist—"What have the tuners been doing here? The organ is an eighth of a tone sharper than it used to be." A tuning fork was produced, and he proved to be right. What has this to do with architecture? Well, this: we know that the Greeks attached great importance to the proportions of parts in their buildings, and it has been argued sometimes, with considerable show of reason, that there could be no value in minutely adjusted proportions as to which the eye could not well judge whether they were strictly accurate or not.

But is it certain that the Greek eye could not judge of them? Is it not possible that the Greeks had so cultivated their sense of proportion in things seen, that a proportion of parts which was not in the right ratio of measurement affected their eyes disagreeably, just as a wrong proportion in sounds affects the modern musical ear disagreeably? We have no proof of it, but it is quite possible it may have been so, and that the impression of perfection we get from the best-preserved remains of Greek architecture may be due to the fact that the Greeks had cultivated the sense of sight as the modern musician cultivates the sense of hearing. Perhaps the corollary might be that we might do wisely to cultivate more carefully our own sense of proportion in things seen by the eye.

The sense of proportion in masses comes into music just as it does into architecture. When Beethoven wrote the third of the four experimental overtures to his one opera—that now known as *Leonora No. 3*, which is quite the finest of the four—his friends told him it was too large in scale for the Opera, which is only a two-act one. They were quite right, and he admitted it by writing the fourth and lighter one. The other one would have been like an entrance lodge that is too large and pretentious for the house. This sense of proportion of parts runs through all the works of the great composers; Mozart's and Beethoven's symphonies are models of the subordination of detail to the leading idea. There is a curious parallel, too, between the two arts, in the method of leaving off. Every composition ends with what is called the common chord of the key it is written in; that is, the most harmonious combination of keynote, third, fifth, and octave; but a big composition is never snapped short off with one sounding of the chord; it has to be repeated several times, sometimes many times, to make an adequate stop. Just so we dominate an important building by a strong horizontal cornice, to cut across the lines of composition and make a decisive finish. And you will find lighter compositions, like Chopin's waltzes and some of Mendelssohn's *Songs without Words*, end with a rippling flourish running up to finish on a high note, like a pretty summer-house that ends in a spirelet or a pinnacle.

Both music and architecture can express character, which is a lighter element than beauty or grandeur; character sometimes arises as much from what is left out as from what is there. The difference between the two is that music can express or symbolise human character and events; architecture can only express artistic character. A good example of characteristic music is the symbolising of the village merry-making in Beethoven's "*Pastoral Symphony*," with the rough dance tune and the bassoon player who can only play two notes. It is just like one of Teniers's pictures of boors dancing; but it is not the best part of the work in a musical sense. Whether in music or architecture, if you want character, which is a half-playful quality, you have to give up something of the higher elements of the arts. One of the best pieces of character I have seen in architecture was the *Pastellistes' pavilion* in the 1900 Paris Exhibition. I knew there was a *Pastellistes' pavilion*, and was looking for it, when I suddenly caught sight of it, unmistakable from its character. Pastel is a kind of lighter and more playful treatment than oil painting, in a slighter medium; the pavilion was a light and playful treatment of Classic architecture; the colour too, a light green and white, helped the expression; it seemed to suggest pastel tones. It was one of the cleverest pieces of character in architectural design I have ever seen.

Now I have done with my æsthetics, and we will come to the practical side; the construction of buildings for music. Opera-houses are purposely left out of my scheme; they are concerned also with spectacle, and form a subject by themselves; we are concerned now only with buildings for hearing music. It is remarkable that many important buildings of this class have been erected without the slightest thought of their suitability for their purpose. St. George's Hall at Liverpool is a notable example. Liverpool used once to have triennial musical festivals, held inconveniently in a large church. It was decided that Liverpool must have a large hall for such purposes, and a competition was advertised for a building to contain such a

hall and the Law Courts. It was won, as you know, by Elmes, a real genius in architecture, who produced what is at once one of the finest halls and probably the worst interior for music in the world. The principal reason why it is so bad will be referred to later, but it may be said at once that Elmes scoffed at the whole idea of thinking of the music, and was even angry that there would be a large organ in the Hall; it would spoil his architecture. We have got a little further than that now; yet I saw a very recent accepted design for a large concert hall where the approaches were admirably planned, but the orchestra was badly placed, and too small, the space for the organ much too small in area; and as there was no height for the large pipes, they were to be carried up in a sort of tower, so that they would be practically out of the hall. It seems to me that when there are competitions for concert-halls either an assessor should be appointed who knows something of music, or that an architect and a musician should be appointed as joint assessors.

New concert-halls are almost always, on the part of the promoters, commercial rather than artistic speculations, and one of the first things generally thought of is the capability of letting the hall for other purposes than concerts. That generally means a flat floor, and after that any idea of making the best possible building for hearing music is at an end. The only thing one can say is—if you must have a flat floor, do not have a solid wood-block floor, on concrete. That is supposed to be the orthodox floor for a public room now, but it is bad for music. You need a boarded floor with a space underneath, to act as a resonator. It is all very well to talk about danger from fire; but one cannot have everything, and if a building is to be the best for music that risk has to be run.

In constructing the best possible building for music we have three main points to consider: (1) efficient production of sound; (2) avoidance of echo; (3) placing the audience in the best and most convenient way for hearing. In regard to the point of production of sound, the orchestra must be built of wood and lined either with wood or with fibrous plaster; materials which sympathise with sound without absorbing it. Textiles absorb sound; there should be no curtains or upholstery about the orchestra. On the other hand, there should be no hard polished surfaces; they do not assist sound, but they may have the result of imparting a hard metallic clang to it. The walls of the orchestra should widen somewhat towards the auditorium, and the ceiling slope gently upward from back to front; and the ceiling should not be higher than can be avoided, as we do not want the sound up there—we want it driven forward towards the auditorium.

The avoidance of echo is a question partly of the materials used and partly of the shape of the room. In regard to material, all substances which reflect light sharply will reflect sound sharply; polished marble and hard polished cements should be avoided. It is those which render St. George's Hall so bad for music; the interior is all marble and hard cement, and the echo when an elaborate composition is played on the organ is such as to confuse the whole thing. It is an extraordinary fact that the late Mr. Willis, who built the organs both at St. George's Hall and the Albert Hall, advised the Albert Hall Committee to pave the floor with tiles and line the walls with hard polished cement; in other words, to repeat in the building the very defect which injures the effect of the St. George's Hall organ. The reason was probably this: a single chord sounded on an organ in a building with much echo, or a piece of slow music played on it, gets a kind of fine rolling effect of prolonged tone; but we want not only tone, we want clear definition of music; and the echo, though it may add an effect to tone, blurs all definition. The moral is—never take the advice of an organ-builder on such matters; organ-builders know how to make mechanism and to voice the pipes, but they know nothing else. The best material for lining walls is fibrous plaster, or a wooden dado with fibrous plaster over it. It is probably due to the employment of that material that the Albert Hall, considering its size, is remarkably free from disturbing echo. There should never be plate-glass windows in a concert room; they

form sharp reflectors of sound; windows should be in small panes with wooden bars, not metal. When the Albert Hall was first built, the echo from the concave glass roof was something distracting; now they have hung a "velarium" under it, and the echo is all gone, swallowed by the velarium; a good example of the effect of textiles in deadening sound, in this case with a beneficial result.

Then we come to the shape of the room as affecting sound and echo. Now on this subject it must be understood that there is no science of acoustics worth speaking of. Acoustics can give us positive information as to the manner in which sound is produced, its rate of travel, and so on; but there is no scientific law which will enable us to predict exactly what sound will do in a room of a certain size, shape, and material. It seems to depend on a number of circumstances which are beyond definite analysis. Of course we know that in the report accompanying a competition design for a concert hall we always read—"The question of acoustics has been carefully considered"; but the statement hardly counts for much. All that we really have to go upon is a certain degree of experience, which shows that some shapes and some materials are to be avoided, as being likely to produce bad results. There is no exact science about it; success depends on experience and observation only, coupled with common sense.

In Roger Smith's little book on "Acoustics" it is stated that a right-angled meeting of walls, if sound is produced near the angle, leads to a noisy repercussion from side to side, which gets repeated at the opposite angle; I have not tested this, but I think it is very likely to be so, and that therefore it is better to have the meeting of walls, and of wall and ceiling, broken by a plane at an angle of 45° ; or, what would probably be still better, by a convex angle screen. A concave surface focusses echo, if there is any; a convex one spreads and disperses it. Then, smooth flat surfaces on walls and ceiling should be avoided. A flat end wall, in a large concert-hall, is almost certain to send back disturbing echoes; its surface must be broken up in some way; for this reason a gallery across the end, besides adding to the seat-room, is sometimes an acoustic advantage. If the side walls are quite smooth, it has been found that sound produced at one end of the hall will tend, when it strikes the wall at each side, to run along the wall and be echoed back from the end. The smooth wall is the cause of the effect in what is called the "whispering gallery" at St. Paul's; a man speaks against the wall, and as the wall is perfectly smooth the sound runs round it and is heard at the other side; if the wall were broken up by pilasters there would be an end of the joke. For the same reason, if in a hall with a circular end and quite smooth walls a sound were produced at A (Fig. 1), I expect that a hearer stationed at B would hear that sound doubled; he would hear it first by the shorter route across the hall, and a fraction of a second later he would hear the wave of sound that had run round the curved end and up the other side. But there would be no such effect if the wall were broken up by pilasters. Generally speaking, however, concave surfaces, either in wall or ceiling, are better avoided; they tend to focus an echo on the centre of the curve, and this should be noticed, because there is a tendency at present towards circular plans for concert-rooms. Echo may be prevented in them by judicious use of materials and wall treatment; but there are various instances of circular rooms in which a whisper at one side is heard plainly at the other side. As reference has been made to the effect of textiles in deadening sound, it may be said that textiles, curtains for instance, at the opposite end from the orchestra, may have rather a good effect in preventing any return echo, though they should not be used prominently in any other part of the room.

We now come to the question of the best way of placing the audience, and the first thing to be remembered is that the audience should "face the music." For this purpose the circular form is very bad. This is shown in the upper

part of Fig. 2, which is the half-plan of the Albert Hall. The plan is, in fact, a perfectly absurd one for a building in which music is to be performed by an orchestra at one end, as it is an imitation of the Roman amphitheatre plan; a plan specially constructed for the sight of a spectacle in the central arena.

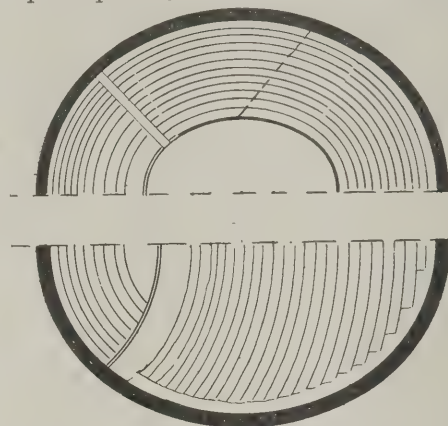


FIG. 2.

This might do fairly well for instrumental music only, if the band were placed in the arena, but would be impossible for choral music. So the orchestra is erected on the smaller curve of the ellipse. The result is that the part of the audience seated to the left of the dotted line have the sensation of sitting, not facing, but side by side with, the performers; they can only see them sideways, and they hear one side more than the other. The seats might be arranged as shown in the lower half of the diagram, but it is a very awkward form of plan to arrange seats on. The Queen's Hall is a semicircle facing the orchestra, merging into a piece of straight gallery on each side, running towards the orchestra. This again is bad, for in these straight portions the audience are again quite on one side of the performers, not facing them. The Liverpool Philharmonic Hall, in many aspects an exceedingly good room, with no echo, is a long rectangle in which all the audience on the ground floor face the performers, and for this part of the room it is about as good as a flat-floor concert-hall can be, and the approaches are admirably arranged. The mistake is up above, where there is a series of side-boxes above the ground-floor corridors, and above them long side-galleries on a considerable slope. Both these are bad places for hearing, except in the front row; and even there it is inconvenient to be sitting sideways to the music, for however it may be said that we hear with our ears and not with our eyes, there is always the wish, half-unconscious, to see the performers at the same time. I say, therefore, that side galleries in a concert-hall are a mistake.

The best plan for a concert-hall is a parallelogram about twice as long as it is wide, exclusive of the orchestra—or perhaps the proportion of width might be a little greater—with the floor rising from front to back, not quite in a straight section, but in a slight curve, becoming rather quicker in its rise towards the back, and set out so that the back row of listeners should be about on a level with the half-height of the orchestra. The seats should be all across the width of the room, facing the orchestra. The reason for having the seats raised on a slope or curve is that, however one may think theoretically that it ought not to be so, it does seem to be the fact that sound tends to rise more than fall from the point of production, and anyone seated at the back of a large flat-floor concert-room has the impression that some of the sound is over his head. That this is not a mere impression is proved by the fact (to which I can testify from experience) that at the Handel Festivals at the Crystal Palace one hears the total effect far better in the transept galleries than on the ground floor. The ceiling of the room should not be a very high one, because the area where no one is listening means wasted sound; we want to confine the sound in the direction of the listeners. And that implies another objection to the circular form for large concert-halls. Such a hall leaves a wide central air-space where sound wanders about uncontrolled, and the sharpness of detail is lost. I have been strongly conscious of this in listening to orchestral music in the Albert Hall. You lose musical detail in so large a space. And on this account I would raise a protest against the tendency to



FIG. 1.

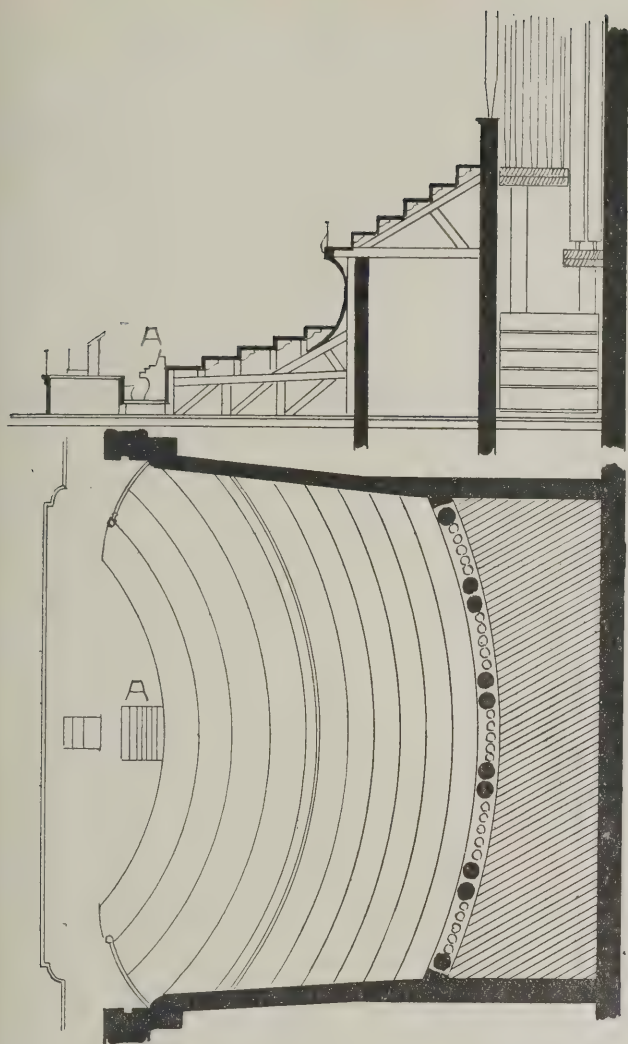


FIG. 3.—SECTION AND PLAN [FOR A NEW CONSTRUCTION OF THE ORCHESTRA.

increased size in our concert-halls. I do not believe it is possible for more than 2,500 people to hear music satisfactorily in one building, and I should prefer to limit it to 2,000. The Queen's Hall seats 2,650, and is, in my opinion, too large for the most perfect enjoyment of music.

There is, however, one class of concert-room in which the circular form might be well employed; in rooms on a small scale for chamber-music. When you come down to small dimensions you are not much troubled about echo; there is not space for it to develop. String quartet music in large halls is a mistake; the scale of the music is too small for the building; it is like a cabinet picture in a gallery intended for large pictures. In the chamber concerts of the Musical Union in London, which were given in the old St. James's Hall, the room was specially arranged for the occasion; a temporary platform was erected in the middle of the floor, and the seats placed facing towards it on all sides. This was much better than having the players on the platform at one end; but still the hall was too large for the music. But a small circular concert-room, with a platform in the middle for the players, might be very good for chamber music concerts, and a charming room might be made of it architecturally. It would not, of course, do for vocal music, where the singer must face the whole of the audience; but it would be perfectly efficient for instrumental music, and would enable a fair number of persons to be seated without any of them being far from the performers.

I have now to make what I believe is an entirely new suggestion for the construction of the orchestra for the combination of band, chorus, and organ. At present there is no structural division between band and chorus; they are crowded close up together so that the back row of the instrumentalists is close up to the front row of the singers. There is a double disadvantage in this. The band is imme-

diately back by the masses of the chorus, whose clothing forms a quantity of textile material not favourable to the reinforcement and reflection of sound; and individual members of the chorus may find themselves close up against instruments playing something different from what they are singing, which cannot conduce to steadiness in their parts. I propose to place band and chorus on two different stages, as shown in the section, Fig. 3, the band being backed by a wooden sounding-board carried up behind the back row of players and slightly curved forwards, so as to act as a reflector and strengthener of the sound. The chorus, on the seats above, would hear the band quite sufficiently, but *en masse*, and not with some of the instruments almost mixed with their own ranks. Then there comes the question of the organ. Generally speaking, insufficient area and height are left for the organ, and either it is bracketed out over the heads of the chorus, which puts it right against the ceiling (a bad position for its effect) or it is projected out into the chorus seats, which puts the singers on each side of it into a recess where they cannot hear each other; and though the singers are supposed to be all governed by the conductor, it is more conducive to keeping time and tune that they should be able to hear each other. The organ in my scheme forms the background to the whole orchestra, but it is not necessary that its real height should start from the top level of the chorus seats. The pipes placed in front must do so—the wind is conveyed to them through conduits; but the wind-chest on which the bulk of the pipes stand could be placed a good deal lower, and that for the large pedal pipes (on the right hand of the section) lower still; they will be just as well heard, and there is then no need for making special provisions for their height above the ceiling of the orchestra. There should be a solid wall behind the organ, and no windows in it, to keep it as much as possible from changes of outside temperature. And as we can now have electric action between the keyboard and the organ, the keyboard should be placed at A, in front of the band and chorus, so that the organist can know what effect he is producing, which he cannot know if he is seated close up to or almost in the organ. I have heard an organist, in that position, drown the whole band and chorus with the sounds of a large organ, probably without being the least aware that he was doing so.

I have often thought that it would be rather a fine thing to have a kind of combined concert-hall, as shown in Fig. 4, with a large hall for band and choral performances, a small circular one for instrumental chamber music, with the platform in the middle, and another small circular one for vocal chamber music, with the platform at one side. It would be capable, as you will see, of being made an effective architectural group. The large hall in this plan will seat 1,800, on a floor rising from front to back, without any galleries; but a cross gallery might be formed over the back portion of it.

The increasing size of our cathedral organs is leading to difficulties as to the placing of the organ. The old position of the cathedral organ on the choir screen was admirable both for musical and architectural effect; I know it has

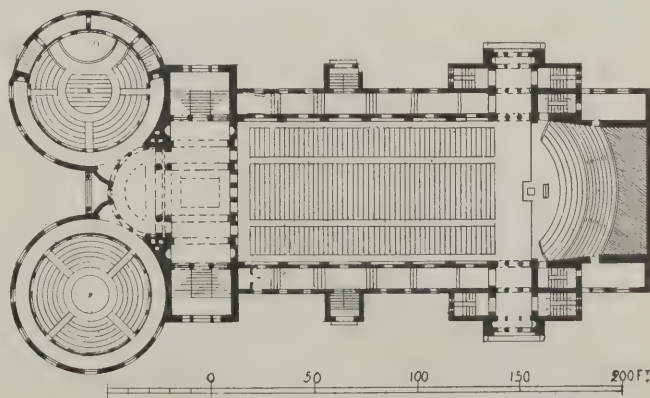


FIG. 4.—PLAN FOR COMBINED CONCERT-HALL FOR THREE CLASSES OF CONCERT

been objected that it interfered with the vista, but to my mind the old cathedral organ on the screen, sometimes with a beautifully designed case, was a very fine object and an addition to the architectural effect. The reason for the increased size of the modern cathedral organ is that we have now learned from the example of Germany that the pedal organ ought to have a complete set of stops—ten or twelve, instead of having only two stops to make a booming effect, and couple the pedal to the manual for the rest of the stops; and it is the pedal pipes that make the size, as they are all twice as large as the corresponding pipes in the manual part of the organ. Hence the organ gets too large for its old position on the choir screen. To put it in the transept is perhaps the best, for the organ effect, but it gets rather too far from the singers that way; to put it in the triforium, as has been done in one of the cathedrals, is one of the worst ways; it is all boxed up there, and cannot be properly heard. I think the difficulty might be met by building up the organ from the floor, under one of the crossing arches, but turning it round, so to speak, so that its longer axis was on the longer axis of the building. It would be possible in that way to build a large organ and yet leave room at each side for an archway into the choir.

The position of the organ in the parish church is hampered by the custom of placing the choir on each side of a long chancel, and to get the organ near them it is put in an "organ chamber," where its sounds are quite smothered. The best place for the organ itself is in a west-end gallery, but in a large church that puts it too far from the singers; in a small church it has been done satisfactorily. For a large church, if you must have the singers in the long chancel, a counsel of perfection would be to have a small organ close to them to accompany them, and a large organ in the west gallery to accompany congregational singing, played by electric action from the keyboard in the chancel; but it is of course a costly method. The whole difficulty arises from the notion that the choir must be seated in a long chancel, which is only a survival from the fact that the mediæval services used to be sung by the monks in the choir. The modern choristers are not clerics; they are simply singers, either voluntary or hired, and the long chancel is the worst position for them either to lead the congregation or to be heard by the latter. Their position in the long chancel is a mere piece of tradition. I suggest that we should go back to an older tradition, and that the Latin basilica church is the best form for modern worship. In the upper plan in Fig. 5 the choir are placed in the space which used to be called the *bema*, between the arcade and the east wall—a kind of shallow transept, and the organ in one or both of the spaces behind them. That is not an ideal place for it, but it is at all events better than the organ-chamber; and the choir would be much better heard there than in the long chancel. A still better way, for practical purposes, is to have the organ in a west gallery, above the

narthex shown in the lower plan (which we will suppose to be a church in the Gothic style), and the choir half-way down the nave on each side. They could then be well heard by the congregation, and be not too far from the west end organ. This plan has been adopted in Lincoln's Inn Chapel, with satisfactory results.

The organ-case is capable of being made a splendid architectural feature, and its possibilities in that way are too much neglected at present, mainly from motives of economy. It may be treated on two principles; either as a decorative open-work screen, concealing the pipes entirely; or as an erection in which the larger pipes are mounted in front as part of the design. To do this the pipes in front have to be taken away from their proper position on the wind-chest, and the wind conveyed to them through special conduits; this is a slight disadvantage and expense, but the appearance of the large pipes in front is so fine in a decorative sense, and so symbolic of the meaning of the erection, that it is worth while to have them as part of the design. When so used, the principal towers of pipes should be on the flanks of the design, not in the centre, as that is the way they are arranged on the wind-chest—the large ones at each end, the small ones in the middle, in order to equalise as much as possible the demand for wind. One of the finest organ-cases in England is that designed by Cockerell for St. George's Hall, Liverpool, though its effect is very much spoiled now by the subsequent erection of the wooden orchestra seats in front, which hide the lower part of the case; for it is another of the little jokes about St. George's Hall that, though it was supposed to be built for musical performances, no one ever thought of designing an orchestra; Cockerell, who completed the interior after Elmes's death, merely introduced a small semicircular tribune on columns in front of the organ, which of course was of no practical use except for solo-singers. One of the fine points in Cockerell's design for the case was that he utilised some of the great square wooden pipes (generally overlooked in designs), placing them effectively in a semicircle round the back of the organ. Among celebrated organ-cases that at Saragossa cathedral is a very fine example of what may be called the romantic style; rich perforated work in a late Renaissance style, influenced no doubt by the recollection and example of Moorish decoration. In this case everything is flat, the effect being got by richness of perforated decoration. In the magnificent Renaissance organ case at Haarlem everything, on the contrary, is modelled; the effect is got by outline and modelled surfaces, in a more directly architectural spirit. In this and other German organ-cases the fine effect should be noticed of the placing of the light choir organ (what the Germans call the *positiv*) as a separate small organ in front of the large one; this not only makes an effective incident in the design, but assists the sense of scale. There is a grand Renaissance organ-case in the cathedral at Troyes, to which my attention was drawn by finding it made the subject of a fine picture in last year's Paris Salon—"Le Grand Orgue à Vepres," by M. Henri Magne; the only time I remember to have seen a large organ made the subject of an important oil-painting.

It is scarcely necessary to say to an assembly of architects that the concert-room ought not only to be a good music-room, but a good example of architectural design. Unhappily this is not often the case, for in this country theatres and concert halls seem scarcely ever to be commissioned to eminent architects; there are evidently other motives for such appointments which one cannot well fathom. They are nearly always started as commercial speculations, and I have seen it stated that an architect is selected, sometimes at all events, because he is willing to take up shares in the concern. To those who may have the good fortune to be commissioned to carry out a concert-hall for better reasons than that, I would say—try to get rid of the prevalent idea that buildings for any kind of entertainment must always be florid and bedizened with gilding in their interiors. That may be suitable for the "music-hall" type of entertainment; but a building which is to be the home of classical music should surely aim at representing the most dignified and refined type of architecture and decoration.

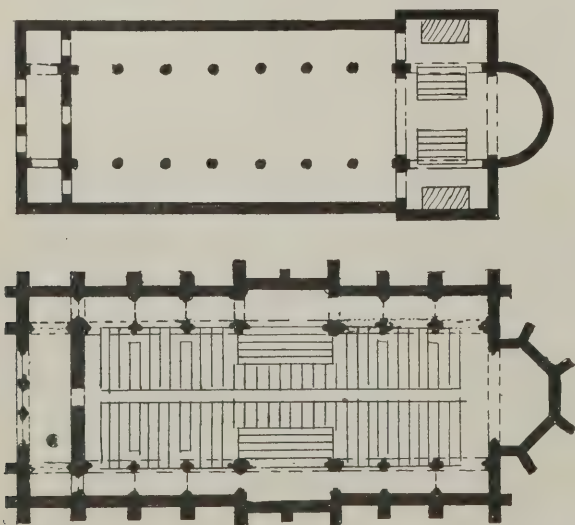


FIG. 5.—POSITION OF CHOIR IN CHURCHES.

L.C.C. CORONER'S COURT, POPLAR.]

The court buildings, in High Street, Poplar, provided by the London County Council, were designed with a view to convenient use with the mortuary buildings adjoining them, which were erected by the Metropolitan Borough of Poplar from designs approved by the Council.

The accommodation includes the court room, coroner's room, a waiting-room for female witnesses with a lavatory adjoining it; a hall with waiting space for male witnesses, and lavatories for the coroner and the jurors.

The court room is oak-panelled, and has an open timbered roof, with tie beams and principals of English oak, ceiled at collar level. It is arranged so that the witnesses' box, which is movable, is near to the door of the court. On the dais, to the right and left of the coroner's seat, are two other doors, one for the jury, and the other for the coroner, both opening into a corridor connected to the mortuary by a covered way. A private entrance from the street is provided for the coroner, and another for the caretaker, whose quarters are on the first and second floors, and have four rooms and a bath-room and a scullery with a copper and gas stove.

The walling generally is of brick, faced with hand-made sand-faced red bricks from Hampshire, and the red roof tiles are from the same field as the bricks. The dressings are of Douling stone.

The floors of the public rooms are laid with pitchpine blocks. The warming of the court is by low-pressure hot water, and ventilation is obtained by fresh-air inlets behind the radiators; in the ceiling are gratings for the outlet of foul air.

Messrs. Gathercole Bros., of Norbury, were the contractors, and Mr. W. E. Riley, F.R.I.B.A., the superintending architect of the London County Council, was the architect.



L.C.C. CORONER'S COURT, HIGH STREET, POPLAR.
W. E. RILEY, F.R.I.B.A., SUPERINTENDING ARCHITECT.

DEFECTS AFTER COMPLETION.

BY A LEGAL CONTRIBUTOR.

A correspondent has drawn our attention to a passage in Mr. Henry White's paper on "The Legal Liabilities of an Architect," read at a recent meeting of the Royal Institute of British Architects. The passage in question, as it appears in our necessarily condensed report on December 27th, is as follows:—"It

does not seem to have been generally realised among members of the profession that the architect's position to his client is a most invidious one as regards liability. The builder, after the usual twelve months' maintenance clause has expired, is freed from all further responsibility towards his client, but the architect remains liable up to the period allowed by the Statute of Limitations—i.e., six years. This is a ridiculous position!"

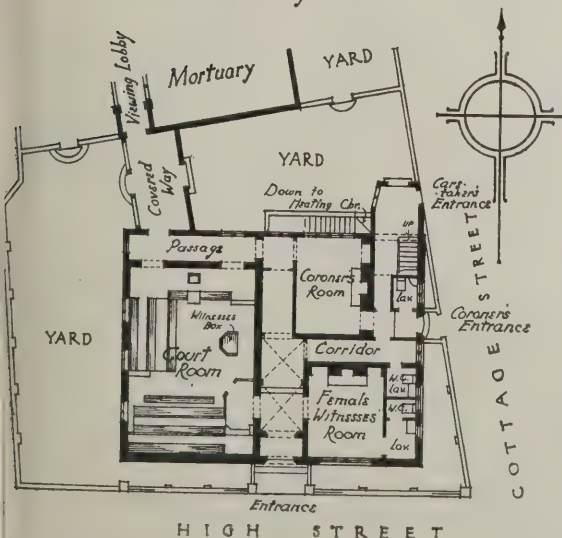
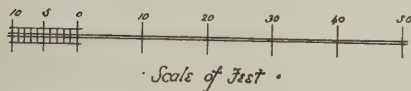
Our correspondent compares with this a statement made by Mr. Greenop in the paper read by him at the same meeting. Mr. Greenop is reported as having said, referring to the case of *Leicester Guardians v. Trollope*: "It is interesting to note that the judge expressed the opinion that the clients were in error in supposing that, as two years had elapsed since the date of the final certificate, they were debarred from proceeding against the builder." Our correspondent adds, "It would be interesting to have your opinion on this important matter, as there ought to be no question as to whether a builder could or could not be held responsible in a case of this sort." We have submitted the matter to our legal contributor, who writes as follows:—

In considering the results of decided cases, it is always necessary to bear in mind that each decision depends upon its own facts; and the causes in the particular case before the court have a most important bearing upon the result. In the absence of a special provision in the contract, the position of the builder and the architect is precisely the same. Each is liable for negligence or breach of contract up to the end of the full period allowed by the Statute of Limitations.

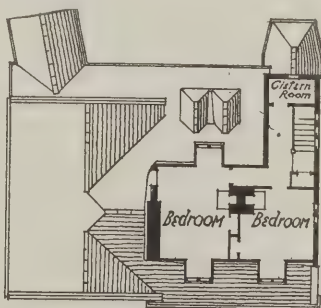
It is important to remember, in the first place, that the use or occupation of a building which has been partially erected, even though for the purpose for which it was intended, is not an acceptance of the work or any part thereof, nor a waiver of defects so as to preclude the employer from objecting that the contract had not been fully performed.

L.C.C. CORONER'S COURT . .

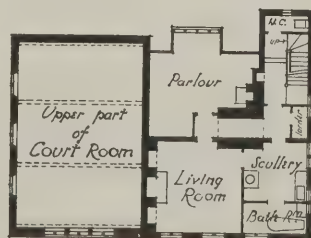
HIGH ST POPLAR E.



• Ground Floor Plan •



• Second Floor Plan •



• First Floor Plan •



L.C.C. CORONER'S COURT, POPLAR:
FIREPLACE IN CORONER'S ROOM.

In one case the plaintiff, a shipowner, bought copper sheathing of the defendant, a copper manufacturer, and the copper was put on the ship, which sailed; but the copper, instead of lasting from four to five years, as usual, became corroded in four or five months, and became unfit. It was held that the plaintiff could recover damages, notwithstanding the acceptance (*Jones v. Bright*, 1829. 5, Bing, 533).

Further payment of, or judgment for, the contract price is no bar to claim by the employer for defective work, nor for damages arising out of the breach. (*Davis v. Hedges* (1871) L.R.6.Q.B.687).

It is material to notice, however, that where work is agreed to be done to the approval of the building owner or his architects, the expression of that approval will prevent any recovery by him for patent defects subsequently discovered. So where a builder contracted to do certain work to the satisfaction of the building owner and his architect, the contract provided that if the use of improper materials or non-performance of the contract appeared within twelve months after completion, the building owner should be entitled to bring suit against the builder, any certificate of the architect notwithstanding. The works were completed, and the architect granted his final certificate, and the building owner impliedly expressed his satisfaction, and paid. More than twelve months afterwards it appeared that bad materials and workmanship had been employed, yet it was held that the building owner had no claim against the builder.

Where the contract is silent in the matter, the measure of damages for incomplete or defective performance is what it would cost to rectify the defects or omissions at the date when they might have been discovered, or when the particular part of the work was completed. And the measure of damage for non-completion to time will include any loss occasioned by the failure to complete the building for its intended use within the contract time, if the particular use can reasonably be supposed to have been in the contemplation of the parties when the contract was entered into, with an

additional sum for loss of use of premises during the repairs.

Apart from the terms of the contract, it is manifest that the contractor could not by any possibility be held responsible for defects arising in the course of time from wear and tear. But if there is a structural defect which ought to have been detected and put right when the works were in hand, it is conceived that the contractor remains liable, for the time at which the defects become apparent has a material bearing upon the question of liability. Thus a breakdown ten years after completion may be due to ordinary wear and tear; while if the same mishap were to occur within a month of the contractor's handing over the work as complete, it would require strong evidence to show that he was not at fault. It is impossible to lay down a general rule by which the liability of the contractor can be ascertained. The time, the nature of the defect, etc., are matters for the consideration of the court.

The following points have been clearly decided: (1) that mere acceptance of the works by the employer is no answer to a claim by the employer in respect of defective work; and (2) if there is a settlement between employer and contractor, it is a question of fact whether that settlement is intended to cover future as well as past claims for damages.

Circumstances may arise, however, in which the certificate of an architect may prevent the employer's making a claim for defects.

CORRESPONDENCE.

Cheap Cottages.

To the Editor of THE ARCHITECTS AND BUILDERS' JOURNAL.

SIR,—With reference to your leading article on p. 289 of your issue of March 20th, I should like to mention another direction in which the cost of cottage building could be very materially reduced. We saw in above-mentioned article how economies could be effected through the materials employed. Another well-known expedient is to economise in the size (or accommodation) of the cottage. The third, and, to me, most obvious expedient, does not appear to have been given much thought. The cost of a cottage (as we know) is made up of materials and labour, the latter being the larger portion, and it is in this direction that I propose economising. Let me say now definitely that I do not mean that men should be underpaid or sweated, etc.

In country districts numbers of the people can turn their hands to almost any form of local employment and change from one to the other with perfect ease—farming or brickmaking, thatching and tiling, road-making, builder's labourer, well sinking, etc., etc. In country districts, also, people are often out of employment for a few weeks. Now my point is, that in country districts where cottages are scarce they could be built by the men themselves in the slack time, the parish council providing the land and the materials.



L.C.C. CORONER'S COURT, HIGH STREET, POPLAR: THE COURT ROOM.
W. E. RILEY, F.R.I.B.A., SUPERINTENDING ARCHITECT.

The rent would be based on the sum spent by the council on the cottages, and would work out at about half the usual cost of similar cottages. The men would be reimbursed for their work by having to pay only half the usual rent. The money value of their services would thus be repaid in 2 or 3 years! The cottages would be secured against the rents being raised; and the tenants would be also secured against dismissal, so long as they did not let the property down; the property being vested with trustees.

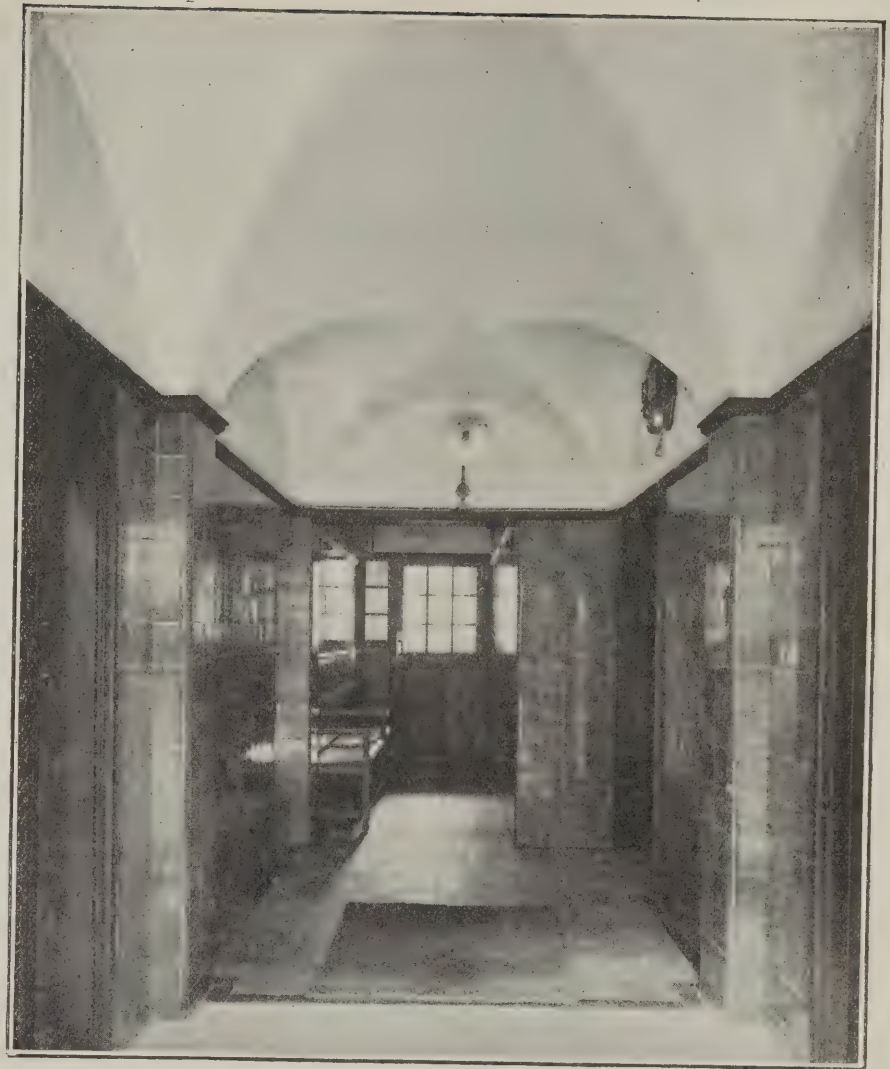
Supposing a block of 4 or 6 cottages were built, that would represent 4 or 6 men (heads of houses) and probably there would be sons in addition. (Possibly some of the womenfolk would assist—they are fond of outdoor work.) As to skilled work, like joinery—the doors and windows and dressers, etc., can be bought ready-made, and fireplaces would be bought ready put together—and so on. Of course, the work would be properly supervised. The men would take an interest in the work, and be less likely to skimp than otherwise.

Working on these lines—making labour restore the balance, and tapping the vast resources of latent wealth shut up in unemployment—there is no need to stint the size of the cottage. There can be a front parlour as well as a living-room; and three decent-sized bedrooms upstairs—not the cupboards usually found in cheap cottages. The materials, too, would be good, and consequently the subsequent repairs would be much reduced. Again, with security of tenure there would be inducement to a tenant to make improvements and additions, etc., both externally and internally.

To sum up, suppose the cost of materials, etc., came to £100 per cottage: that, at 5 per cent. (which would probably be sufficient interest) represents a rental of £5 per year—say 2s. per week. This would be quite as low as would be required for any district. In the neighbourhood in which I am living, the demand is for cottages at 2s. to 2s. 6d. per week. Of course, discretion would be used as to tenants, and well-paid men would not be allowed to take them, as they could afford more expensive cottages; and, on the other hand, undesirables would be excluded, and anyone who let the property down would be given notice to quit.

In conclusion, I may remark that the scheme is by no means new really, as a few generations ago, it was just what people did! They built their own houses—of "wattle and daub," perhaps—but the point is, they *built* their own homes, and of local materials, many of which houses remain now, at rents within the limits of the agricultural labourer's means. Present-day cottages would be built, of course, of more substantial materials, but they should be built by the people. It was the natural thing to do in days gone by, and we can take it to be the natural solution of the problem to-day. People have got so accustomed to having everything done for them nowadays that, like hermit crabs, they now can only live in houses built by other people.

To mention some existing instances of this scheme, Roman Catholic brotherhoods, etc., I believe put up their own buildings; work their own land; carry on trades, etc., on this system (namely, doing it themselves), and are in a position to undercut any tradesman, nurseryman, or builder, and even schools, in the country. I do not see why the cry of expense of cottage building should not



L.C.C. CORONER'S COURT, HIGH STREET, POPLAR: ENTRANCE HALL AND CORRIDOR. W. E. RILEY, F.R.I.B.A., SUPERINTENDING ARCHITECT.

be knocked on the head by the same means (it would only be a modern form of the old-time crafts really).

This scheme I now humbly put forward, in the hope that it may provide an idea or two in seeking the solution of this widespread problem of housing reform, and apologising for trespassing so unconscionably on your valuable space.

LICENTIA TE R.I.B.A.

[We cannot suppose that our correspondent's proposal will find much support among those who are regularly engaged in the building trade; and we should unhesitatingly agree with them that in every case building should be done by builders. We have withheld our correspondent's name in order that he may not suffer from the full force of the avalanche which his purely altruistic proposal seems pretty certain to bring down upon his devoted head.—EDS. A. and B. J.]

The Coal Strike and Time Clauses in Contracts.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The unparalleled confusion in industry brought about by the coal strike leads us to point out two pieces of practical patriotism, which, if generally followed at once and for the immediate future, would do much to mitigate the after effects of this disaster. As a firm employing thousands of men we view with anxiety the inability of railway

companies to transport our stone and granite products from the quarries, many of them inland, to their destinations. All railway companies have issued notices involving the total cessation of such traffic till the conclusion of the strike. This places us at a disadvantage with foreign competitors, who, in foreign vessels with foreign coal, can ship to a British port giving the shortest possible land journey to site, and can supply materials for the completion of contracts for which, through no fault of our own, our materials are not at present available.

As this difficulty is shared, we believe, by a large number of British firms supplying all sorts of building and engineering materials, we venture to urge on all architects, surveyors, engineers, and builders that as far as possible, except in the case of absolutely necessarily urgent work, an agreement be made to waive the time-clauses of contracts as far as is reasonably possible in order to preserve as much work as possible for British firms and British workmen when the crisis is over.

The abnormal conditions also variant us, we believe, in urging that during the period of depression which must follow the present crisis, the Government Departments, also public bodies such as municipal corporations, as well as architects, surveyors, and engineers stipulate that, so far as possible, British materials only be used in work under their control until normal trade is again obtained. A

system of voluntary patriotic action of this nature is, we believe, sure to find favour at the present time among responsible persons of every shade of political thought, and we therefore venture to make these two suggestions.

UNITED STONE FIRMS, LTD.

2, Bristol Chambers, Nicholas Street,
Bristol.

Associates and R.I.B.A.

To the Editor of THE ARCHITECTS AND
BUILDERS' JOURNAL.

SIR,—Your editorial on this subject was a weighty warning to the Institute and others as to the possibility of Registration.

I my opinion, we shall never get it, because there is no public need for it—our own needs are another matter. The public are safeguarded by by-laws and officials, and it is their purse mostly that is in the balance.

The Institute have thrown open the doors to all sorts and conditions of Fellow and Licentiate, and for what use—what goal?

To the public these letters make no difference or, if any, possibly, on the side of the Licentiate.

In my opinion the Institute was getting stronger and stronger, without any door opening.

The Royal Academy and the R.I.B.A. were quite enough gradually to force all to become properly qualified.

I hope associates will try and get the Institute back to its old position, as Registration is not practicable. Ask any lawyer!

London, E.C. ASSOCIATE.

WARMING AND VENTILATING SPECIALITIES.

Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester, forward for notice a copy of their new catalogue, No. 30, just published, showing their warm-air ventilating patent Manchester grates, patent Manchester stoves with open fires, patent exhaust roof, and special inlet ventilators. The catalogue is divided into three sections, to facilitate easy reference, the patent Manchester grates being listed on white paper at the front of the catalogue, the patent exhaust roof and inlet ventilators being on red paper in the mid-distance, and the patent Manchester stoves on blue paper at the end. A few words of introduction are given at the commencement of each of the three sections. There are also several coloured illustrations of patent Manchester grates and stoves.

The first series of Manchester grates illustrated are those with the firm's latest patent low fire projecting back. These grates having no bars to interfere with the radiating properties of the fire, better results are consequently attained with this latest form of Manchester grates; but as there are many persons who prefer grates with bars, grates of this type fitted with an improved projecting back are listed. The catalogue contains a list of some of the buildings to which the patent Manchester grates, stoves, or ventilators have been supplied, and views of a few of these buildings are included.

The patent exhaust roof and inlet ventilators are all made by special machinery.

The patent Manchester stoves are now fitted with the firm's latest patent warm-air-mixing chamber, which greatly increases the heating capacity of the stove, without any additional consumption of

fuel. These stoves are made either single or double-fronted, and with ascending or descending smoke flues, thus allowing the stove to be fixed in the most desirable position. The stoves are supplied in a variety of designs and finishes, from the most elaborate stoves encased in richly glazed faience of any colour, down to the plainer patterns of cast iron; but the internal construction is the same irrespective of the design and finish.

Where ascending smoke flues are used these are encased in either richly glazed faience or with iron outer casing, with outlet near ceiling level for the extraction of the vitiated air, thus forming a combined powerful warming and extract ventilating system. Nearly all the hospitals erected in recent years have in use Shorland's patent open fireplace Manchester stoves.

ELECTRICAL SUPPLIES.

A new edition of Sections T, D, U, and M of the catalogue of Messrs. Simplex Conduits, Ltd., wholesale electrical suppliers and manufacturers, 116, Charing Cross Road, W.C., and Garrison Lane, Birmingham, which has just been issued, covers all prices and particulars of the Simplex Steel Conduit System, together with the products of the Simplex Company's switchboard and fuse department; as well as reflectors and fittings designed for mill and factory lighting. In the present edition of the catalogue the latter lines in particular have been considerably extended. Section T comprises conduits and fittings; D, distribution boards, switch gear, enclosed fuses; U, the Simplex flexible wiring system; and M, water-tight fittings for mills, ships, etc.

The general arrangement of the list is based upon the firm's fifteen years' experience of conduit manufacturing, and arranged with a view to giving clearness and facility for reference.

In regard to the various additions to the Simplex Steel Conduit System, attention may be drawn to the Simplex Universal conduit box, which is designed with the object of providing one fitting which will fulfil all the various purposes which are met with in the average conduit installation; that is to say, the box may be used as a junction box pure and simple; as a ceiling rose box, switch box, pendant box, or plug box. It is listed complete in all these various combinations in the catalogue, and it is suitable for use with one, two, three, or four runs of conduit. It is often a matter of difficulty to specify accurately what the requirements will be on any one job; and, in order to save duplication in their stocks, contractors can obtain these boxes ready drilled and tapped, but with each outlet stopped by means of a small screwed plug. Thus, if on an installation a contractor is likely to require both one-way and two-way boxes, he can at a small extra charge have all the boxes ordered two-way, with each outlet stopped by one of these screwed plugs. To utilise the box either as a one-way or a two-way, it is only necessary to remove one or both, as the case may be, of the plugs by means of a screw-driver.

Another section of the list which has undergone considerable extension and revision is that relating to tools. Several pages are now devoted to the illustration and pricing of various wiremen's tools, such as are required in every-day installation work. These comprise—in addition to such essentials as screwing tackle—speed counters, micrometer gauges, port-

able tube vices, etc. The improved pattern portable tube vice, for screwing or cutting tube, is recommended as being very handy for large conduit jobs. It has a combined pipe vice (up to 2 in.), with ordinary parallel jaws, and is fitted with a convenient shelf for tools.

The fuse section has been added to by the inclusion of particulars of Hope's bi-metal fuse wire, the 5-amp. and 10-amp. sizes of which are now ready for delivery.

The section dealing with reflectors, etc. for factory lighting, has been extended by the inclusion of pressed steel reflectors designed on scientific lines, manufactured under the Holophane-Benjamin patents.

A CENTRAL HEATING AND POWER PLANT.*

By R. J. DURLEY B.Sc., MA.E. M.Inst.C.E.

Economic and other conditions have led in many places to the development of central plants for the distribution of heat to large groups of buildings or to districts in towns, and these installations are in successful operation both with and without accompanying electric generating-stations.

The present paper describes the arrangement and equipment of a central heating-plant, combined with an electric-light and power station, designed to serve the various buildings of McGill University. Although only of moderate size, the installation is of interest on account of the somewhat severe climatic conditions and the unusual nature of the service. Attention is called to the fact that the economic possibilities of such a station depend very largely on the relation between the demand for heat and that for electric current.

The University buildings were, up to 1908, heated individually by their own steam or hot-water equipment, and took current from the local electric-supply company. The coal used for the heating service was necessarily of an expensive kind, and the cost of current was rather high. Economy and improvement in service, therefore, were sought by utilising cheaper coal in a central boiler-plant, and heating the various buildings from one source, employing for this purpose as far as possible the exhaust steam from electric generating-sets. The buildings which will ultimately be served have a total volume of about 7,570,000 cubic feet; they contain 81,000 square feet of direct-radiation heating-surface, need 185,000 cubic feet of warmed air per minute for ventilation, and require as a maximum about 475 kilowatts for light and power. The greatest demand for steam for heating and ventilation for all the buildings in cold weather would be about 30,000 lb. per hour.

The station as at present working supplies current to eleven buildings, and heat to five; and the heating service will be extended to all the buildings as opportunity serves.

A brief discussion of the systems of heating and ventilation in general use in Canada for large buildings, and a description of the nature of the demand for steam and current for the University purposes, is followed by notes as to some of the problems arising in the design and construction of underground piping systems for steam and hot water.

The McGill power-house itself is not of an unusual type, its equipment including four water-tube boilers, three

*Abstract of a paper read before the Institution of Civil Engineers.

steam-electric generating-sets, the necessary heaters and auxiliary machinery, and the ordinary apparatus for the switch-board and electric accessories.

The heat-distribution to the buildings being largely by means of forced circulation hot water, as well as by steam, the heaters and circulating-pumps are installed in the engine room, and are at present capable of supplying hot water to 60,000 square feet of direct-radiation heating-surface. Means are provided for obtaining a record of the heat delivered to the heating systems of the various buildings.

The electric distribution is by underground cables throughout, the cables as well as the heat-distributing pipes being carried partly in tunnel and partly in conduit. Secondary heaters have been installed in two of the buildings, in order to avoid the expense of renewing their existing heating-pipes and radiators.

The paper closes with a description of the methods of operation adopted, and the systems of temperature regulation employed, together with some notes as to working-costs.

SOCIETY OF ARCHITECTS.

The fifth ordinary meeting of the Society of Architects for the Session 1911-12 was held at 28, Bedford Square, W.C., on March 7th, at 8 p.m. Mr. Percy B. Tubbs, F.R.I.B.A., (vice-president) in the chair.

Three nominations for membership and ten for studentship were announced.

The ballot was taken, and the following candidates were declared to be duly elected as members:—Brown, E. O., Gravesend; Chasemore, A. E., London, S.W.; Fincher, P. R., Neath; Kemp, W. J., junr., London, N.; Miller, J. M., Montreal. Fifteen students were also elected.

Mr. A. Alban H. Scott (member of Council) then read a paper on "The Testing of Materials for Reinforced Concrete," an abstract of which appears in another portion of the present issue.

THE LONDON ASSOCIATION OF MASTER DECORATORS.

A meeting of the general committee of this association was held at the offices, 92, Queen Victoria Street, E.C., on March 11th, Mr. C. E. Wilkinson in the chair.

The Secretary read letters received from the Employers' Parliamentary Council, the Prime Minister, and the Trades Disputes Act Reform League, and presented a copy of the proposed Bill for the amendment of the Trades Disputes Act. He explained that he had written to the Prime Minister, submitting that a deputation should be allowed to wait upon him, and the letter in reply to that request was read. The Prime Minister regretted his inability to receive a deputation.

The Chairman said that the only thing the association could do was to support the Bill, using what influence it had with Parliamentary representatives. He thought the Bill had the unanimous support of the members.

It was agreed that the secretary be instructed to write to the Master Builders' Association, saying that the members present at the committee meeting that evening had signed the petition, and cor-

dially endorsed the action they were taking in the matter, and sent another resolution to Lord Claude Hamilton, informing him that the matter had been discussed by the committee, which was unanimously in favour of the Bill he was promoting.

A letter from the London County Council on the subject of technical education was referred to a sub-committee for consideration and report.

The Secretary read a letter from the National Federation of Building Trades Employers with reference to the question of merchants supplying goods direct to the public on trade terms. The association was asked what they were doing in the matter, and in what way the Federation could help the association or the association help them.

The Chairman thought the reply might be that the association were taking the matter up whenever they received information, and had been successful in dealing with the firms.

It was agreed to place on the agenda, for discussion at the next meeting, a proposition as to means of helpful intercourse with the Paint and Varnish Society.

It was agreed that the Insurance Act, as it affected members of the association,

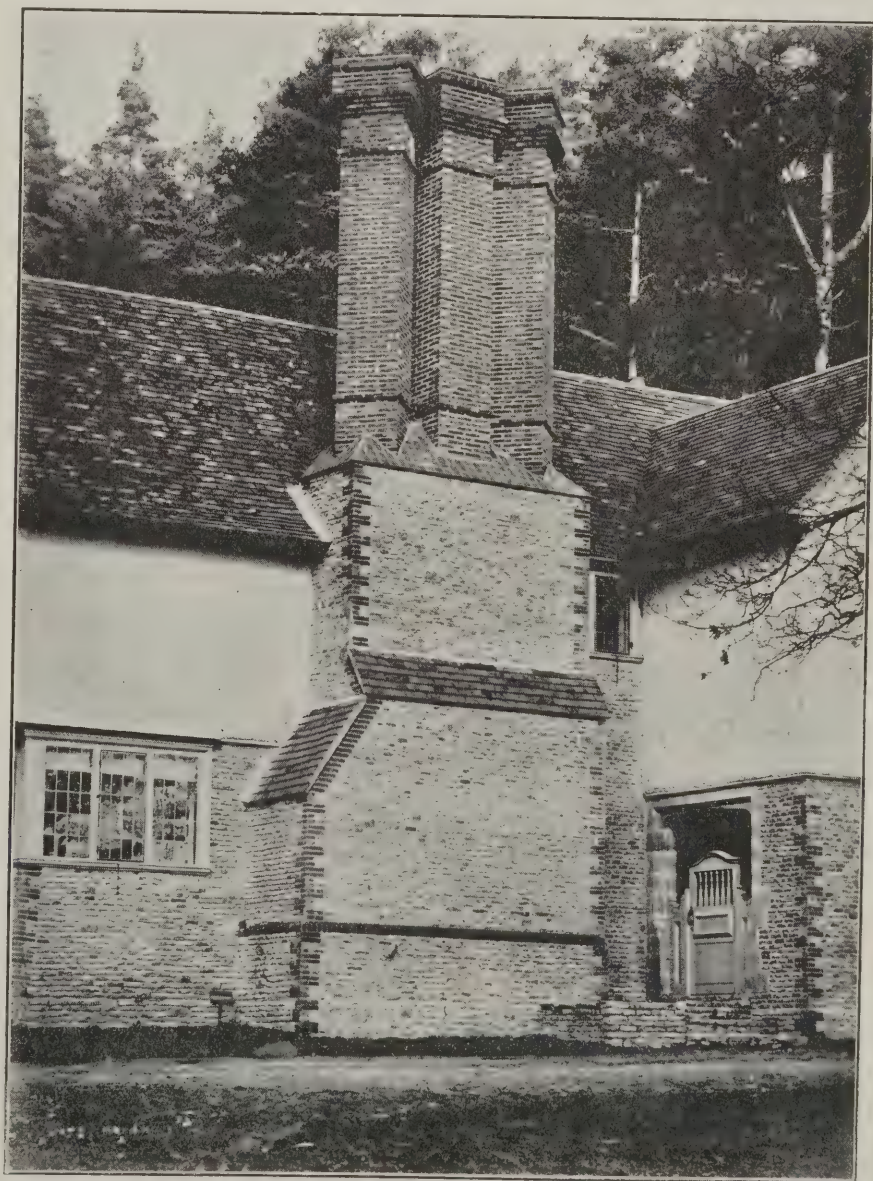
should be set down for discussion at the next quarterly meeting.

The Secretary submitted proof certificates, samples, and estimates of costs in connection with the proposed Continuous Certificate of Discharge, and it was agreed that as soon as the card had been decided upon the secretary should be instructed to write to a number of firms asking them to take the matter up, and saying the cards could be supplied at such-and-such a price, and also that if taken up, it would be in the interests of themselves and of the men.

Messrs. C. Collier and Son, of 4, New Quebec Street, were elected members of the association.

Civil Engineers' Examinations.

Excellent results have recently been obtained in the examinations of the Institute of Civil Engineers by Messrs. Penningtons, University and Engineering Tutors, Oxford Road, Manchester. Associate Members' Examination: Messrs. G. Le Huquet, R. B. Dorman, F. A. Watson, J. Wilson, Butler, E. H. Pike, J. S. A. Walker, P. Holt, F. A. Davies, E. Jones, G. Stewart, L. Tod. Students' Examination: Messrs. R. G. Torrens, J. T. Thompson. There were no failures.



CHIMNEY-STACK ON HOUSE AT WITLEY, SURREY. E. L. LUTYENS, F.R.I.B.A. ARCHITECT.

NEWS ITEMS.

Liverpool Architectural Society.

The Council of this Society requests all members to refrain from competing in the following architectural competitions—Warrington Schools; Llandudno Police Buildings; Ormskirk Golf Club.

Marriage of Mr. Rudolf Dircks's Daughter.

The marriage took place at Heyshott, near Midhurst, Sussex, on March 16th, of Mr. Richard Cobden-Sanderson, son of Mr. and Mrs. Cobden-Sanderson, and only grandson of Richard Cobden, and Miss Dorothea Dircks, daughter of Mr. Rudolf Dircks, Librarian of the Royal Institute of British Architects.

Models of Old London.

The five models of Old London made by Mr. John B. Thorp, of the London Drawing and Tracing Office, 98, Gray's Inn Road, W.C., which were exhibited at the Franco-British Exhibition and afterwards at the Festival of Empire, have been acquired for the London Museum, where they are shown in an annexe specially built to receive them.

Ecclesiastical Metalwork.

There is now on view and for sale at the London depot of the Duchess of Sutherland's Cripples' Guild, Ltd., 14, New Bond Street, W., a collection of ecclesiastical metalwork executed by crippled lads—some of it from old models and some from designs by architects, including Mr. Temple Moore, F.S.A. The collection is certainly worth a visit.

Strasbourg Cathedral Tower.

The tower, 142 metres high, of Strasbourg Cathedral rests on foundations that are nearly 650 years old, and have evidently become unsound, since for some five years past the doorway has shown cracks which are continually widening. The remedy that has been decided upon by an international commission of architects is rather surprising. The tower is to rest on a platform constructed of oak-tree trunks "capable of supporting the eight millions of kilos which it weighs." The cost is estimated at more than £6,000.

Sulphur and Reinforced Concrete.

When reading analyses of clinker for aggregate in reinforced concrete, the rule—Cast aside sulphite; but sulphate is first rate—is easy to remember and always to be relied on. Of the three chemical unions of sulphur, the first, sulphide, is a compound of sulphur and a metal; the next, sulphite, is a compound of sulphur, a metal, and a little oxygen; and the third, sulphate, is sulphur, a metal, and more oxygen. The sulphur in the sulphate has absorbed all the oxygen that it chemically can absorb or unite with, and further chemical action is therefore impossible.

Collapse of an Old Roman Wall.

A large portion of the south or Port Wall of the Roman city of Venta Silurum (Caerwent) has collapsed. The exploration of the city has occupied considerable attention on the part of the Clifton (Bristol) Antiquarian Club, and many other archaeologists. The wall was one of the finest of its kind in the Kingdom. The north side of the wall, which is over 20 ft. high, is filled up with soil to within a few feet of the top, while the south side is free from top to bottom.

The expansion of the soil inside, caused by the recent change to a higher temperature, caused the southern, unprotected face of the wall to fall outwards, leaving the core and the northern face still standing. Steps were about to be taken to support another portion of the wall, but no measure to strengthen the part that has fallen was deemed necessary. The rubble or herring-bone masonry has been exposed, and it is thought probable that this also may soon collapse.

Lectures on Town Planning.

A course of lectures on town planning will be commenced at the offices of the Garden Cities and Town Planning Association, 3, Gray's Inn Place, W.C., on April 12th next, and will continue every Friday until Whitsuntide. The first lecture will be given by Mr. Raymond Unwin, F.R.I.B.A. The lectures will be open to all who are interested in the subject, and opportunities for questions and discussion will be afforded. Tickets for the course may be obtained from the secretary of the Association, Mr. Ewart G. Culpin.

The Architecture of Stamford.

With reference to the article under this title which appeared in our issue of October 4th, 1911, the Mayor of Stamford has, at the hands of Mr. Henry Walker, of the Stamford Public Library, kindly forwarded some interesting notes and corrigenda; the most important of which are—that "Erving Road" should read "Ermine Street"; that the Crown Inn has now been rebuilt; that "The Portico," shown on p. 355, has been transformed into the public library; and that 41, High Street has been altered for the accommodation of the co-operative stores by which it is now occupied.

The New London University.

Now that sums amounting to more than £300,000 have been promised towards the acquisition of the vacant site on the Duke of Bedford's estate north of the British Museum, it seems likely that we shall eventually see erected there a building worthy of a great University.

OUR PLATE.

The Secluded City of Ecalpon.

One can only 'approach Ecalpon by night, and, as all who sleep in the city are mysteriously spirited away and awake only to find themselves in some quite different place, the buildings and tortuous streets of the quaint little town have not often been described by travellers or guide-book compilers.

But, apparently, the cathedral was begun by a Laon mason and enlarged by one who had seen Beauvais and Rouen. And the latter-day ecclesiasties grew lazy and built themselves snug lodgings, leaving their church to be perfunctorily finished off in the Renaissance period.

The town church, too, is a queer, unfinished jumble of Flamboyant and Renaissance work, and there is an old castle overlooking the river, while artists with an affection for such things may sketch the Louis XVI. Hotel de Ville, which appears in the background of the illustration.

The exact locality of the city is a secret. Its name if spelt backwards may supply a hint of its whereabouts.

CHARLES A. NICHOLSON.

NEW ICE RINK, EDINBURGH.

The new ice rink, Haymarket, Edinburgh, which was recently opened, has been constructed upon the site formerly occupied by Swan's cattle mart. The building, which is placed east and west on the site, has an internal length of 220 ft. with a breadth of 120 ft., and a height to the roof, which forms an elliptical arch, of 38 ft. The ceiling is of plaster, and is divided by bold bands into seven bays, in the centre of each of which is a ventilator grille. Three rows of five-light electrolights depend from the ceiling, the whole building being lighted by means of electricity. Daylight is admitted by a row of semicircular clerestory windows on the north and south sides of the hall and by three large circular-headed windows in the east gable. The glass of the windows is of a special kind, made in such a manner as to throw the whole of the sun-rays upon the roof and not on the floor of the rink. In the west gable is a large structural arch, with recess, and on each side of this arch, and on each side of the east windows, the wall space of the gables is covered with large pictures executed by the scenic artist, Mr. F. T. Dunn, of the Theatre Royal, illustrative of the seasons. The ice surface will have an extent of 17,000 square feet, forming, it is said, the largest ice rink in the kingdom. This large area is entirely free from pillars of any kind. At the east end of the hall are tea and dining rooms, kitchen, cloak-rooms, repositories for skates, etc.; at the west end are rooms for the storage of curling stones, and in front of the arch already referred to are an elevated bandstand and raised seats for spectators. On each side of the ice floor is a spacious raised promenade, with panelled barrier 2 ft. 9 in. in height, separating it from the rink. At intervals along the front of the promenade overlooking the rink rise the massive steel columns which carry the girder roof. They have been covered with white fibrous plaster, have ornate capitals, and form a feature in the decorative aspect of the hall. At the east end these columns constitute an entrance of three bays to the tea-room.

The freezing machinery installation consists of ammonia compressors with brine circulation through continuous lines of steel tubing laid on the insulated floor of the rink. Of such tubes there are about nine miles. These are connected with main pipes, which are carried under the flooring of the promenade, and joined up to the compressors. The cold brine is circulated at a temperature of about 20 to 22 Fahrenheit—representing 10 to 12 degrees of frost according to this scale, and there will be on the floor a sheet of ice of from 5 to 6 inches in thickness. The ammonia compressors and a Diesel oil engine, which supplies the driving power, are placed in a special engine room at the west end of the rink. The Diesel engine is of 100 horse-power; the fly-wheel of the compressors has a diameter of 10 ft., and a 9-rope drive. Above the engine room are a large water tank and something like 20 tons of condensing pipes. At the same end is a boiler house for the purpose of supplying hot water to heat, by means of radiators, the promenade of the ice rink, the tea, dining, and other rooms. The construction of the rink and the provision of the machinery have been carried out by Messrs. W. M. Anderson and Co., engineers and architects, Glasgow. The cost of the building and machinery has been £18,000.



ECALPON



ON, BART., M.A., F.R.I.B.A.

CONCRETE AND STEEL SECTION. (MONTHLY.)

ECCENTRICITY OF BEAM REACTIONS ON COLUMNS.

by OSCAR FABER, B.Sc., A.M.I.C.E., and P. G. BOWIE.

In what is generally, if rather vaguely, described as "constructional engineering," knowledge is more deficient as regards the behaviour and strength of columns than of any other unit. This applies equally to columns of steel, reinforced concrete, and timber, or other materials.

The difficulties are chiefly connected with the following problems: (a) Determination of eccentricity of beam reactions; (b) buckling tendencies; (c) determination of transverse tensional stresses (or the design of the web or ricing of steel stanchions and the cross bending in concrete columns).

In the present article, it is only proposed to deal with the first of the three problems mentioned above. Its importance will be realised at once when it is remembered that in the case of a rectangular homogeneous column or strut, the maximum stress due to a load applied at one edge is four times as great

probably it does not alter the conditions appreciably; where, however, it is made strong and stiff, its effect would be to prevent the beam deflecting without pulling the top of the columns over with it. This necessarily implies a greater moment, and therefore a greater eccentricity on the column, which may then be analysed as in (2) (below). Not infrequently, such top brackets must be considered as weakening the column, and detrimental rather than the reverse to the stability of the structure.

CASE II. I

The calculation of the eccentricity of the reaction from a beam monolithic with its column is much more difficult, and had not, up to the present, been dealt with in any published literature. It has therefore been very fully analysed by the authors in Faber and Bowie's "Reinforced Concrete Design" (Edward Arnold, London, 1912), in very general terms, taking into account unequal loading of monolithic floors, allowing for dead and live loads, stiffness of beams, columns, etc., and various other considerations. Such general equations are necessarily complicated, if they are to be exact, and are therefore well left as an appendix, from which simplified formulas and curves are given for various cases likely to be met in practice.

In the present article, it will not be attempted to review the mathematical derivation of formulae, which may be referred to if required. It is thought that more generally useful results will be obtained, in the space available in these columns, by selecting one case and working this out in detail with a view to showing what eccentricity is obtained. A building has been selected, having proportions quite common in practice, and the eccentricity of the outside columns will be studied, since on these the eccentricity is most marked. The formulae in the treatise referred to contain the

expression $\frac{W_d}{W_t}$ the ratio between the dead load of the floors, and the total load dead plus live, to which they may be subjected. While for interior columns this is a factor of fundamental importance, it is important to a much less degree for outside columns.

As regards outside columns, this factor comes into play in so far as the condition of loading on the second bay affects the deflection of the outer bay. Obviously

the greatest deflection of the outer bay takes place when it is fully loaded, and when the second bay has its dead load only.

Hence in the present example a further simplification will be made by considering only the case of all bays fully loaded (equivalent to putting $\frac{W_d}{W_t} = 1$). This simplification is always made in the design of steel-frame buildings.

With these reservations it is shown that the moment on outside columns is given by

$$M = w l^2 \frac{1 + 6D}{12(1 + 10D + 20D^2)} \quad (1)$$

where w = total load on beam per unit of span

l = span of beam

$$D = \frac{B}{KC}$$

B = Moment of inertia of beam divided by its length.

C = Moment of inertia of column divided by its length.

K = a constant.

The quantities B and C are measures of the stiffness of beam and column respectively. The constant K depends on the condition of the end of the column at its junction with the floor above or below that under consideration.

If it were free at this junction as at 2 (a) $K = 3$, if fixed in direction as at 2 (b) $K = 4$, and if constrained to have the same slope as the floor considered 2 (c), $K = 6$.

For outside columns the latter condition applies very approximately when all floors are loaded, and will be taken in the present example.

When the column extends both up and down from the joint considered, as it does from the lower floor of Fig. 2c, its stiffness is proportionately increased, as the section above has to be strained as well as the section above. The value of $K C$ in formula (1) is then to be taken as the sum of the $K C$ s applying respectively to the upper and lower tier.

Full particulars of the building under consideration are given in Fig. 3.

The sections of beam are taken so as not to exceed stresses of 16,000 and 600 lb. ins. in the steel or concrete respectively.

The moments of inertia of the beam are 27,875 ins⁴. and 71,600 ins⁴. in roof and lower floors respectively, these moments being expressed in units derived from areas of concrete, thus requiring

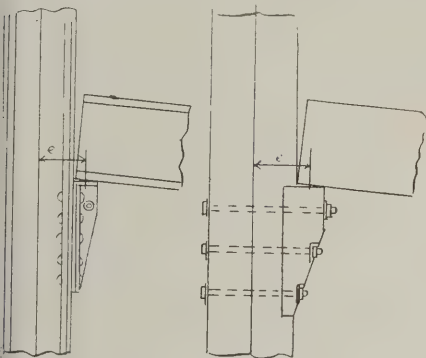


Fig 1

if the same load were centrally applied. This eccentricity is frequently exceeded in common practice.

For the present purposes, it will be convenient to classify joints between beams and columns under the following heads: (1) Where the beam rests upon a bracket; (2) where the beam and column are monolithic, as in reinforced concrete, and have the same slope impressed upon them by any straining conditions to which they may be subjected. (3) when the beam rests on the column.

CASE I.

The first type is very common in steelwork and timber construction, as is illustrated by Fig. 1, in which the deflection of the beam is exaggerated for greater clearness. In such cases it is usual to take the eccentricity to the centre of the bracket. It is to be noticed, however, that where the deflection is great and the bracket stiff, the eccentricity will be greater than this, its maximum value being, of course, the distance from the edge of the bracket. Usually the error involved by taking it at the centre is not great.

In steel construction, it is common practice to have a small angle bracket above the beam, as well as the large one on which it rests. Where this is bolted,

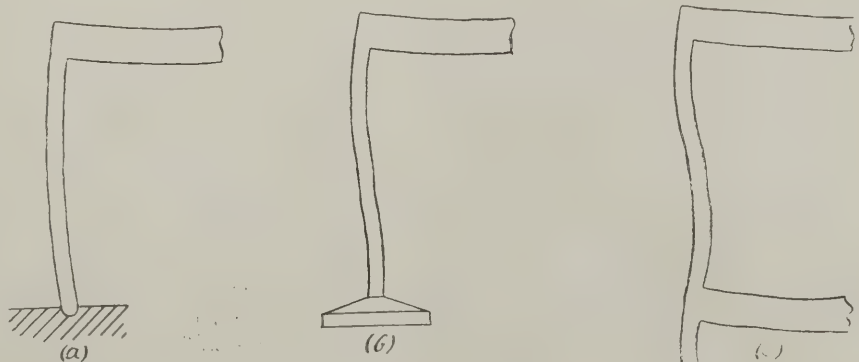
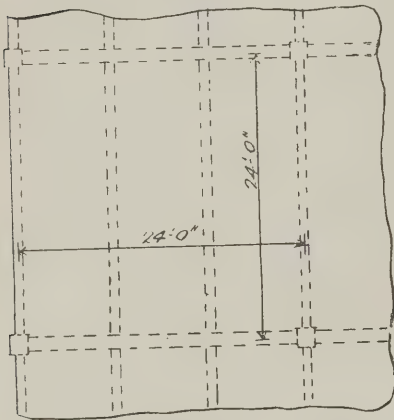
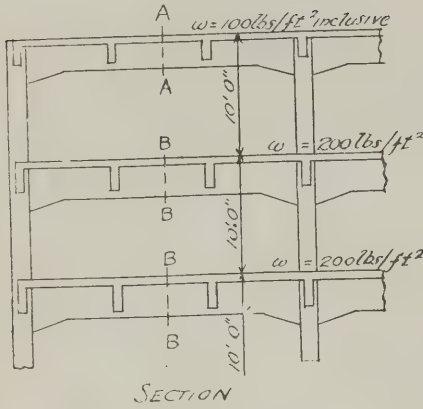
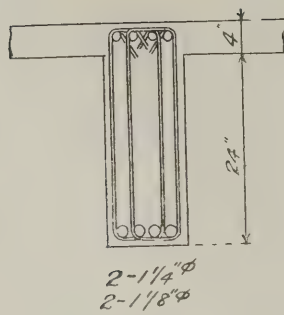


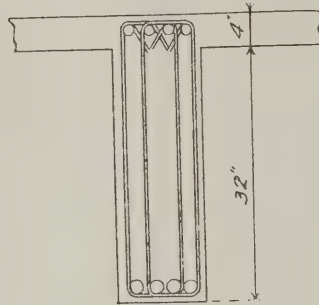
Fig 2



PART PLAN



SECTION AA

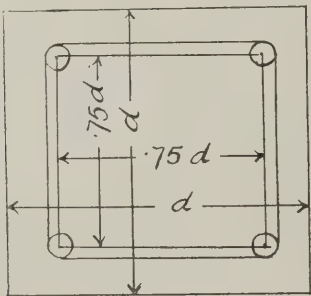


SECTION BB

Fig 3

to be divided by 15 = $\frac{E_s}{E_c}$ to express the moments of inertia in terms of areas of steel.

In the design of the columns, exactly 2 per cent. of longitudinal steel will be used, in the form of four bars, the centre of the bar being $\frac{d}{8}$ from the edge, as in Fig. 4 :—



The reaction of the beams on the outside column are 28,800 lb. and 57,600 lb. in roof and floors respectively.

The quantity wl^2 in formula (1) is 16,600,000 ins.-lbs. for roof and 33,200,000 ins.-lbs. for floors.

The solution of the stresses in an outside column therefore, of any selected size, reduces itself into the calculation of its equivalent area, and its moment of inertia.

From the first, the direct stress may be simply determined, while from the latter $D = \frac{B}{KC}$ becomes determinate, enabling formula (1) to be solved. From this moment, the stress due to eccentricity may be easily calculated.

The analysis will be made *in extenso* for one case, and the results given for the others.

Consider the case of an 18 in. column on both tiers.

For this the area as steel

$$A_s = \frac{2 \times 18^2}{100} = 6.48 \text{ ins}^2.$$

Equivalent area

$$A_e = 18^2 + 14 \times 6.48 = 415 \text{ ins}^2.$$

Moment of inertia (concrete units)

$$I_c = \frac{18^4}{12} + 14 \times 6.48 \times 6.75^2 = 12890 \text{ ins}^4$$

$$\therefore C = \frac{I_c}{l_c} = \frac{12,890}{120} = 107.4 \text{ ins}^3$$

$$\therefore KC = 6 \times 107.4 = 644 \text{ ins}^3$$

$$B = \frac{I_b}{l_b} = \frac{27875}{288} = 96.8 \text{ ins}^3$$

$$\therefore D = \frac{B}{KC} = 0.15$$

From this we can solve from formula (1) for the moment in the column

$$M = \frac{wl^2}{12(1 + 10D + 20D^2)} = 16,600,000 \times \frac{1}{18.56} = 891,000 \text{ ins. lb.}$$

Hence stress due to bending

$$= \frac{891,000 \times 9}{12890} = 622 \text{ lbs.-ins.}^2$$

Stress due to direct load

$$= \frac{28800}{415} = 70 \text{ "}$$
$$\frac{692 \text{ "}}$$

The actual value of the eccentricity is evidently the moment divided by the load, and is

$$e = \frac{M}{P} = \frac{891,000}{28,800} = 31 \text{ ins.}$$

These figures apply to the upper tier immediately below the roof beams.

Coming now to the column on the lower tier—that is, immediately below the highest floor—we have for the same section of column, which will, of course, have the same equivalent area and the moment of inertia.

$KC = 2 \times 644 = 1288$, as we now have the upper and lower tiers to consider as regards stiffness.

The beam on this floor is heavier, and

$$B = \frac{I_b}{l_b} = \frac{71600}{288} = 249 \text{ ins}^3.$$

$$D = \frac{B}{KC} = \frac{249}{1288} = 0.193$$

whence from formula (1)

$$M = 33,200,000 \times 0.049 = 1,625,000 \text{ ins. lbs.}$$

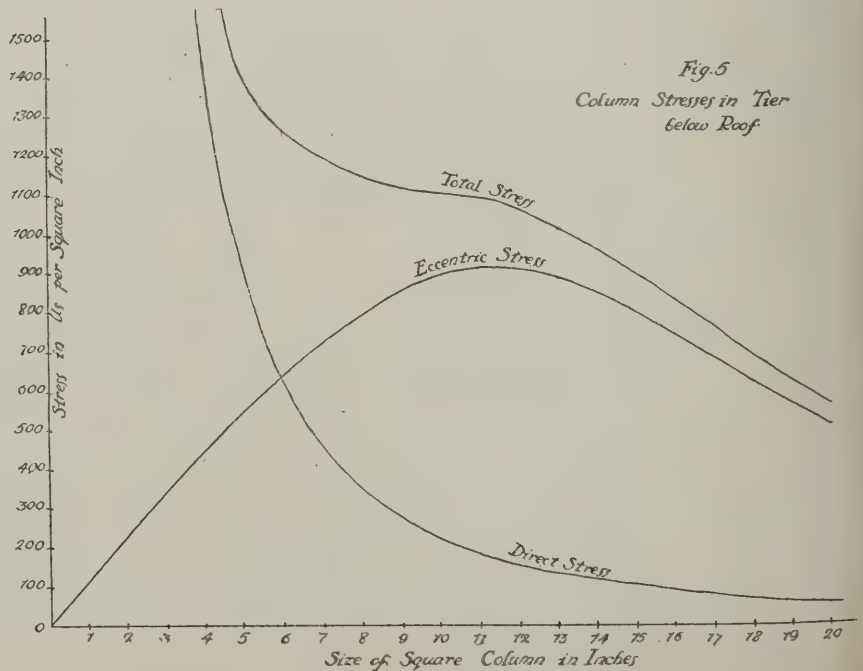
This moment is resisted half by the upper and half by the lower tier, so that stress due to bending

$$= \frac{812,500 \times 9}{12890} = 558 \text{ lbs. ins.}^2$$

stress due to direct load

$$= \frac{86400}{415} = 208 \text{ "}$$
$$\frac{766 \text{ "}}$$

Fig. 5
Column Stresses in Tier below Roof



The value of the eccentricity is

$$\frac{1,625,000}{57,600} = 28.3 \text{ ins.}$$

Consider now the floor below. It will be found that for the same size column, we have the same value to B K C M, and therefore to the stress due to bending and the eccentricity of the floor reaction.

Evidently the direct stress will be increased in direct proportion to the increased load, and will be $208 \times \frac{5}{3} = 346$.

The constancy of the eccentricity applies also, for this size column, to all the lower floors.

These calculations have been made fully for the 18 in. column to show the method clearly. Without giving further calculations, the results will now be given for other columns.

The stresses due to direct load and bending for columns of various sizes in the upper tiers are given on a curve in Fig. 5.

They are given for the tier below in Fig. 6. This curve applies to all floors

below as regards eccentric stresses, and the direct stresses, for a given size column, will of course vary with the number of floors above it.

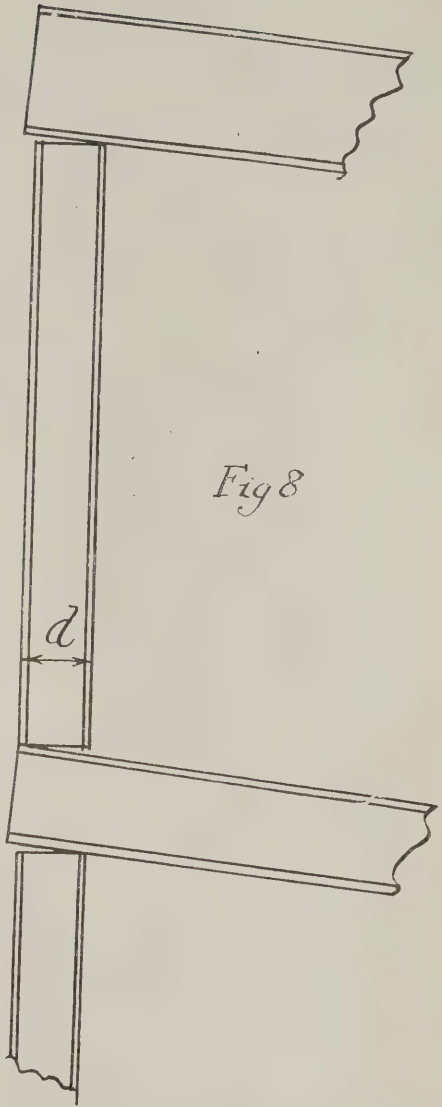
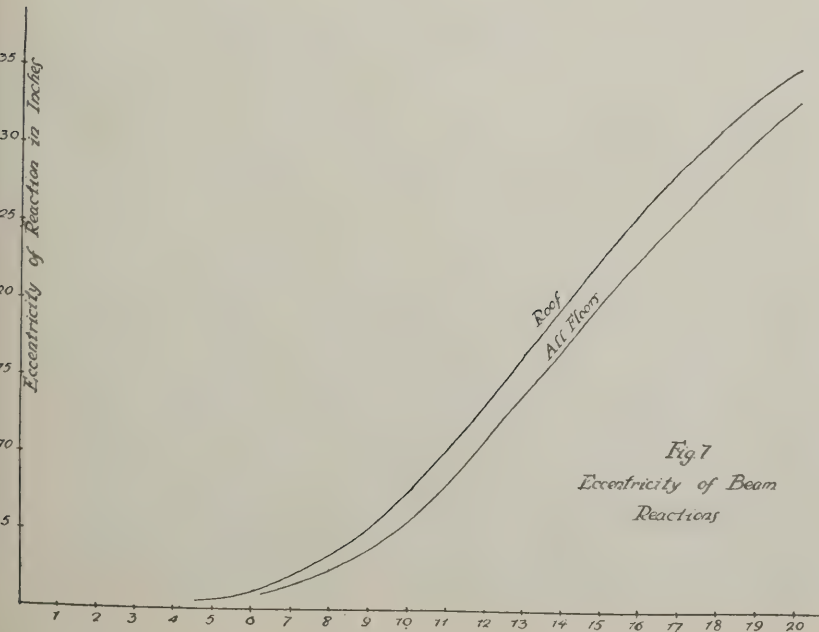
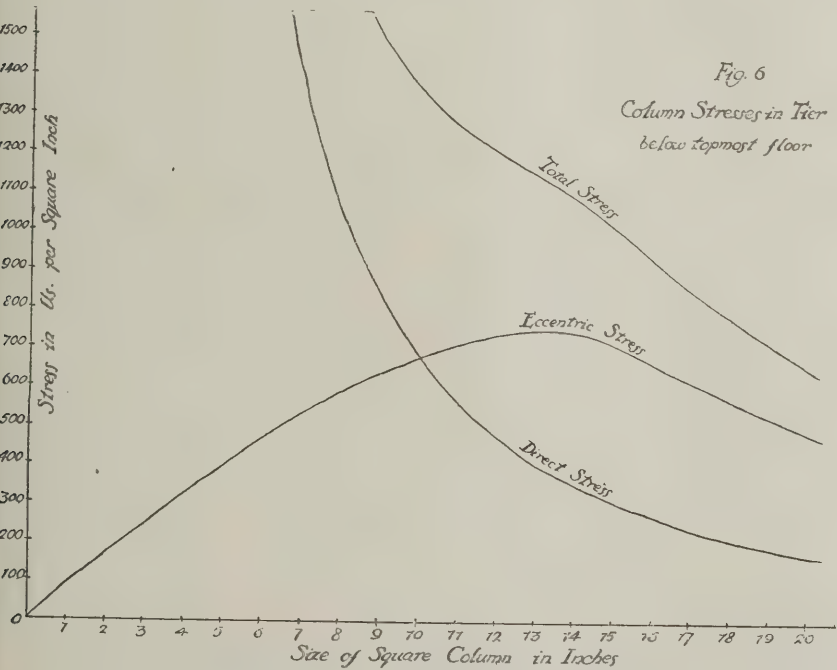
The actual value of the eccentricity is given for the different columns in Fig. 7.

It must be remembered that on all floors except the top, the bending moment represented by this eccentricity is taken up partly by the lower tier and partly by the upper tier, the stresses due to it being therefore only about one-half what they would be when this is ignored.

It is interesting to consider several points brought out by the results now before us. Consider, for example, Fig. 5.

It will be seen that the size of the column giving a stress of 600 lb.-ins.² and ignoring the eccentricity—which we fear has not infrequently been done—is about 6½ in. square. The actual stress in such a column is about 1,240 lbs.-ins.²

The column required to keep the total stress down to 600 is about 19½ in. square. Note the fact that the eccentric stress first increases directly with the size of column, then rounds off to a maximum



and diminishes. The reason for this is that where the column is very slender the slope at the end of the beam is determined by the beam alone, and in that case the eccentric stress in the column varies directly with the distance of the outer fibre from the neutral axis.

When, however, the column becomes stiffer, it reduces the slope of the joint, and then the eccentric stress is of course, reduced also.

Note, also, the curious shape of the total stress curve, which shows that between the limits of 6 and 12 in. the maximum stress is reduced very little by an increase in size.

CASE III.

When the beam rests on the column (Fig. 8). It does not appear to be generally understood that a column supporting a beam which rests on top of it has any eccentricity at all. When, however, it is considered that the beam necessarily deflects, it is obvious that the load will be taken entirely on the edge of the column unless the latter bends or gives. Assuming the beam was resting uniformly on it before being loaded, this assumption is made in all that follows, and will be practically correct in first-class design and workmanship.

It is necessary to differentiate between cases in which the connection is so rigid and strong that the beam will at no point be lifted off the column and cases where this can occur (as in Fig. 8). In the first of these cases, the construction behaves as monolithic, and may be calculated as for case (2).

When the joint is not so rigid, the eccentricity of the roof beam reaction will be between zero and half the depth of the column. The best way to determine it, is to calculate it as in case (2) as a monolithic construction. If it is found that the eccentricity is so small that no tension is developed at the back, the joint will not open, and the eccentricity calculated is correct. If, however, tension is developed, the joint will open, and the eccentricity thereby be increased, though it will be in no case exceed $d/2$ (unless brackets are put on).

Consider now the joint on the lower floor. Calculate the stresses as a monolithic construction (case 2). If the eccentricity is so small that no tension is developed the joint will not open, and the stresses are as found. If it opens, the moment on the lower tier may attain to the total load at a leverage of $d/2$. This is evidently an eccentricity of much more than $d/2$ when expressed in terms, not of the total load, but, as usual, of the beam reaction at that floor. For this reason, this eccentricity rapidly becomes so large as to equal that obtained by considering the structure monolithic, in which case it behaves as such, and does not open. It is thought that the treatment outlined is so simple as not to warrant a numerical example.

It may be stated that, with the usual proportions of beams to columns and with usual spans and loads, the roof joint will always open, the joint at the floor below generally so, while floors below that, again, will generally behave as if monolithic.

TEST OF FLOORS ON THE "DENTILE" SYSTEM.

A very successful test was carried out, on March 7th, on the floors which have recently been constructed by Messrs. H. Arnold and Sons, contractors, Doncaster, for the Midland Carriage and Wagon Works, Washwood Heath, Birmingham. These floors have been constructed on the Dentile system, which is controlled by the Indented Bar and Concrete Engineering Co., Ltd., of Westminster. The feature of the floor is the

use of hollow tiles, which have the effect of greatly lightening the floor itself, and at the same time making it soundproof without the use of projecting beams either of steel or of reinforced concrete. What is called the "two-way" Dentile floor is easily capable of spanning over areas up to 30 ft. square or more without any beams, and without being unduly thick. The tests in question were two in number. The first test consisted of a square floor reinforced in both directions 17 ft. 10 in. by 16 ft. 7½ in. The working load for which this floor was designed was 100 lb. per sq. ft., but it was arranged to test the floor up to 1½ times this load—namely, 150 lb. per square foot. This load was considerably exceeded during the test. The material by means of which the load was placed upon the floor consisted of cement sacks, and in all exactly 20 tons were placed on this floor, which is giving a load of 152 lb. per sq. ft. The deflection was very carefully measured, and increased quite gradually during the progress of the test to 0.07 in. While the full test load was still on the floor the centre of the floor was exposed by the removal of a sack of cement, and five heavy blows with a piece of timber 18 ft. long (9 in. by 12 in.) lifted to a height of 2 or 3 ft. and banged down upon the floor by the united efforts of five men, were given to it. The floor withstood this extremely severe test admirably.

The next test took place on a small similar room, 16 ft. 7½ in. by 13 ft. 10 in., in which the floor was constructed on the one-way system; that is to say, it was only reinforced in the smaller direction, there being no reinforcement whatever in the direction at right angles to this. The full load—which again was 1½ times the working load—consisted of 17.2 tons, but the deflection in this case only amounted to 0.01 in.

The extreme success with which these floors of both types withstood not only the heavy test load, but also the test for shock, affords the best possible proof that Dentile floors are suited in every way both to the carrying of heavy dead loads, and to heavy falling loads with a

minimum deflection and vibration. The floors are quite economical, and the surface afforded by the tile for plastering is exceptionally good. The absence of beams over large spans enables the ceiling treatment to be carried out with great ease.

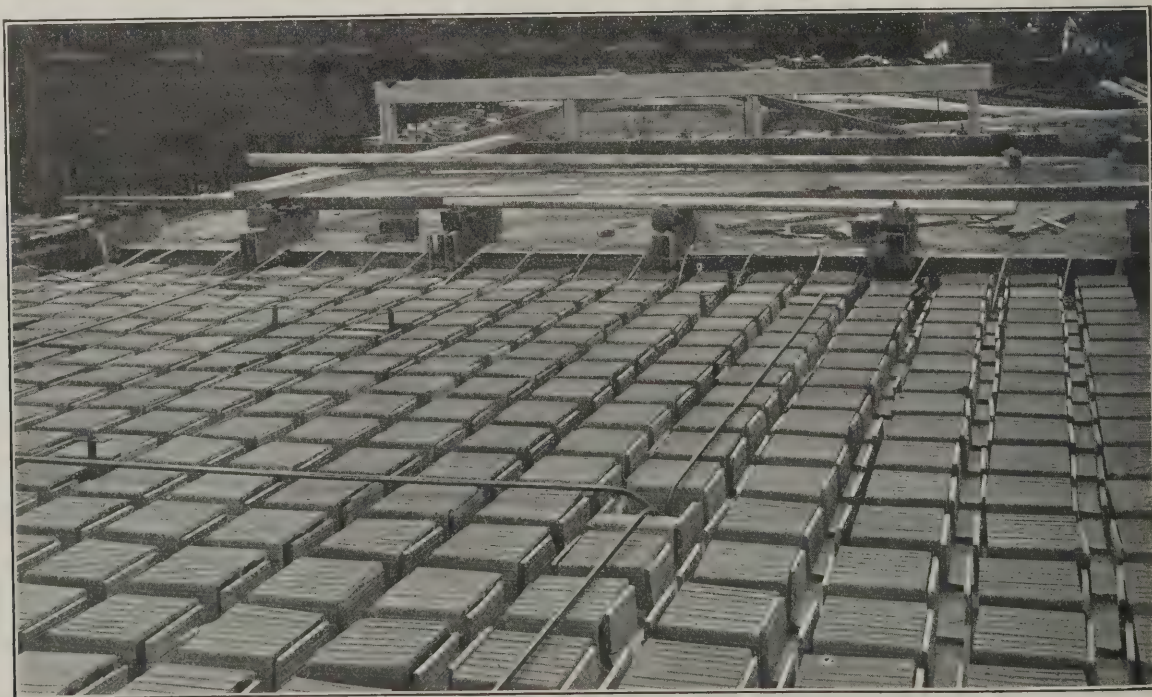
TESTS OF CONCRETE SLABS.

Tests of concrete slabs 20 in. square and 2½ in. thick, described in a paper by Messrs. S. M. Dixon and P. W. Villiers, recently published by the Institution of Civil Engineers, showed for plain concrete that, if the strength of the slab supported on two edges and subjected to a concentrated load, is taken as 1, then the strength when similarly supported and carrying a uniform load equals 2. When the slab is supported on four edges and carries a concentrated load the strength equals 2, and when supported on four edges and carrying a uniform load the strength equals 4. These rules only apply when the slab is evenly bedded—that is, when, as in practice, it is made in one piece with the cross girders. With specimens of different thicknesses tested on four edges the transverse strength varies approximately as the square of the thickness, when this is small, increasing slightly more rapidly for thicker slabs. The strength of reinforced concrete slabs was found to vary greatly according to the kind of reinforcement used.

THE CONCRETE INSTITUTE.

A meeting of the Concrete Institute took place at Denison House, 206 Vauxhall Bridge Road, Westminster S.W., on Thursday evening, March 14th, 1912, Mr. E. P. Wells, J.P., vice-president, in the chair.

The following were elected members:—Mr. Victor Alden, London; Mr. Reginald Birkett, Manchester; Mr. Alfred Cordery, London; Mr. Alexander T. Cranmer, Twickenham; Mr. Robert Gillies, Kingston, Jamaica; Mr. Charles A. King, Edinburgh; Mr. Alfred Wadsworth Lovell, Hull; Mr. A. C. Hughes, who resigned at the end of 1911, resumed membership. For the paper read, see page 335.



THE DENTILE FLOOR: VIEW OF CONSTRUCTION WITH "L" TILES.

TESTING OF MATERIALS USED IN REINFORCED CONCRETE.*

BY A. ALBAN H. SCOTT, M.R.San.Inst.

The author had been asked to give a paper on the "Testing of Building Materials," but had abandoned the idea of considering building materials in general in favour of the subject now chosen.

The necessity for some very serious consideration of this subject had been particularly impressed upon his mind, in view of the fact that certain figures are being laid down as the ultimate strength of concrete by the various reports and regulations issued comparatively recently.

Laboratory Tests, and Others.

THESE figures seem to have been based upon results obtained from laboratory made specimens only, made under the most favourable conditions, without any allowance for the more or less rough methods which only are obtainable at present on the actual construction. In making some of the laboratory test specimens the materials are very accurately gauged, thoroughly and evenly mixed, and, in lieu of the ordinary punning and slight ramming (if any) which you get on the works, they are subjected to pounding down with a heavy hammer, and thus getting an artificial result, a result which is impossible to attain under the most perfect conditions obtainable on even a perfectly organised job.

The test results which he intended to describe were such as could be reasonably expected from work executed under a specification such as was published last year; but even these results can only be expected if professional supervision is given, not only to the general work, but also to the most minute points.

Reinforced concrete demands greater study than any other material used in constructional works. Architects, except for a comparative few, have until recently been too slow in making themselves acquainted and proficient in this class of construction. Engineers were still worse; and clerks of works and general foremen who are really fit to take charge of a fair-sized job of reinforced concrete are few and far between. All this, however, is now being rapidly changed, and it has been realised that concrete and reinforced concrete are entirely different materials.

Procedure in Testing.

It has always seemed to me to be inconsistent to take elaborate precautions to obtain cement of a high and even quality, and treat the other component parts as if the ultimate strength of the concrete did not also rely upon their influence.

The following is an outline procedure I would suggest should generally be adopted with regard to the Testing of Materials for Reinforced Concrete work:—

All tests to be made at an independent testing and experimental works.

The cement to be tested from samples taken from the bulk, such samples being taken from various positions of the bins at the makers' works. After the cement has arrived on the job, samples are again taken from various bags, thoroughly mixed, and again tested. Further tests made from time to time as the material is being used in the works, the number of these tests being regulated by the quantity of the consignment, and the time taken in using same.

All tests on cement should be made in accordance with the latest specification of the British Standard Specifica-

tion for Portland Cement, with the further test for ascertaining resistance to thrusting stress of both neat cement and also cement and sand, in the same proportions used for the tensional briquettes.

Aggregate or Coarse Material.

A sample in bulk to be delivered on to the works, a sample taken and tested: 1st, for freedom from loam and other foreign matter; 2nd, for the proportion of the various sizes of the crushed material; 3rd, for the amount of voids; 4th, for specific gravity. Tests repeated on the material being used in the works from time to time as may be considered desirable.

Sand and Water.

Sand to be treated in exactly the same way as aggregate, and in addition a test for the amount of material that will pass a sieve of 1-50 in. by 1-50 in. apertures should be ascertained; this, which can be called "flour," should be rejected.

Water is tested to see that it contains no unusual or injurious properties.

Steel.

Steel to be first inspected at the makers' works with a view to ascertaining: 1st, whether welds have been made; 2nd, for surface defects; 3rd, correctness of diameters.

Every rod over $\frac{3}{4}$ in. diameter must be stamped with a die as having been inspected. Sample lengths are taken from the actual rods, which are duly stamped and sent to the testing works for the purpose of ascertaining: 1st, their ultimate strength; 2nd, their elastic limit; 3rd, their elongation and contraction of area; 4th, to observe the structure of the metal at fracture, whether the same is silky, granular, or fibrous. 5th, bending test. All these tests to apply to rods and wire from and including 3-16 in. diameter and upwards.

Concrete.

The test specimens of concrete should be of a standard size of 6 in. cube. Six specimens made for each test, three made in the laboratory and three on the works. The cement for each six sets of specimens to be taken from the same consignment. The laboratory test specimens should be made as far as possible on practical lines, so that the result should be such as can be reasonably expected from concrete in the actual work.

All specimen pieces made on the works should be made from concrete taken from the actual mixing platform. All such specimens should be made in metal moulds, and the concrete worked in by punning and tamping to the same degree as has actually taken place in this structure. Six test cubes should be used for each test, and the minimum tests should be made at the following periods: 7, 28, 56, and 90 days and 1 year.

For the purpose of record and research work such tests should be carried out at the following periods: 7, 28, 56, and 90

days; 6, 9, and 12 months; 2, 3, 4, and 5 years.

Centering.

No mechanical tests are required for this, but when the strutting is being placed into position, rough calculations should be made to see if any undue deflection or movement is likely to take place during the process of placing the moist concrete into position, and inspection made to see that the joints have been properly filled up by rubbing with hard bar soap or other material to prevent dripping of the cement and sand.

The Function of the Materials.

We might now consider whether the tests mentioned above are reasonably required, and before proceeding to do so, a few remarks on the work the material is called upon to do may not be out of place. In reinforced concrete the concrete takes compression and shear; the steel taking all the tension and assisting for shear and compressional strains. The concrete being stressed to not more than 600 lb. per square inch in compression, and 100 lb. per square inch in shear; the steel in compression in beams not more than nine times per square inch that of the adjoining concrete, and in columns not more than fifteen times that of the adjoining concrete and steel in tension 15,000 lb. per square inch, and the adhesion of the concrete to the steel 100 lb. per square inch of actual contact.

These figures being subject to various conditions, such as the efficient tying in of the steel in compression to prevent bulging of the rods, and proper proportion of metal to the concrete and spacing of the steel. In the case of columns the effective area of concrete is only taken as that part which is hooped in by the ties to the vertical steel members.

If we are working to a factor of safety of a fourth of the ultimate, the ultimate resistance to thrusting stress of the concrete should be not less than 2,400 lb. per square inch, the resistance of concrete to shear 400 lb. per square inch, and the steel 60,000 per square inch ultimate tensile.

These figures show that all the materials are called upon to be of high efficiency, and to work in harmony and simultaneously together, and have been adopted in consideration not only of their ultimate resistance but also the relative coefficient of elasticity.

The work is designed on the assumption that the materials actually used are capable of resisting these stresses.

The following are a few reasons why the author considers the tests necessary:

Aggregate and Coarse Material.

It has been found that most aggregates (unless washed) contain loam and other foreign matter. A sample of river aggregate recently tested gave as much as 7 per cent. of loam, and most loams have a surprising covering power, being of the very finest of "flour," and consequently when the cement is added there is a thin film between the cement and the actual silicious material, thus preventing the cementing together of the particles. Some time ago it was advocated in certain quarters that the presence of loam in aggregate did not decrease, but rather increased the strength of concrete. A slight mistake was made there. The material which was mistaken for "loam" actually contained certain cementing properties which had the effect of making the concrete a richer mixture.

With aggregates which are practically uniform in size, or if the various sizes are not properly graded, proper bond is not

*Extracts from a paper read before the Society of Architects, March 7th.

obtained between the various materials as the mortar is concentrated, and thus a portion of the mixture is deficient in cementing materials; therefore it is most desirable that the grading and voids should be worked out very carefully; and with certain exceptions, it is found, within limits, that the grading which gives the smallest amount of voids in the aggregate and sand results in concrete of greater strength. With aggregate and sand containing a high percentage of voids, a greater proportion of cement is required. [A diagram was shown illustrating the extraordinary differences in percentages of voids contained in various kinds and sizes of materials.]

Thrusting Stress.

It should be remembered that as the number of particles increase, so the proportion of the cement to the whole should be also increased owing to the greater covering power required. A test cube made with a very small amount of aggregate and a large amount of sand, with the usual proportions of cement, gave an ultimate resistance to thrusting stress of only about 600 lb. per sq. in., such low result being entirely owing to the fact that the usual amount of cement in that case was not sufficient to cover properly each particle of the sand and aggregate, and a perfectly cemented and homogeneous mass was not obtained.

The ultimate resistance of any material is its strength at its weakest point, and the actual area of the concrete is the gross area minus the area of voids at any section; it is therefore necessary that the ascertained percentage of voids in the aggregate and sand should be entirely filled up with cement, with an additional allowance for completely surrounding each particle. The usual rough and ready means of determining the exact proportion of the cement to the sand and aggregate has resulted in many cases of disaster.

Specific Gravity.

The specific gravity of sand and cement should be taken in order to compare with the weight of the test specimens, as such weight is materially affected by the original weight of the aggregate and sand. There are at least two methods of ascertaining the amount of voids. One is by ascertaining the specific gravity of the material used; and secondly, by allowing the aggregate and sand to absorb moisture then to dry the surfaces without extracting moisture from the material, and then in the test tubes to add water until such time as the level of the aggregate and the water is at the same point.

Quality of Steel.

In no part of the steel for reinforced concrete should welds be allowed. Welds can be made in various ways, but it is impossible to test each weld, and in these joints it is not an exaggeration to say that not one weld in 500 would be of equal strength to the rest of the bar, and it has been ascertained with most disastrous results that the strength at the point of the weld goes as low as 30 per cent. of the bar adjoining. This is caused not so much by the lack of amalgamation of the material itself, but generally by the fact that large voids occur right in the centre of the joint.

Surface defects in steel are often found in the ordinary commercial bars, being indicated by most minute cracks, generally starting in the shape of a "V." Although such defects are in themselves perhaps almost innocent, yet immediately the

material is subject to any stress they develop in a most alarming manner.

It has been found that the diameters of bars vary from that specified, resulting in one case in a loss of 12 per cent. in the area. Excess diameter is also often met with; and as the final measurements are taken on a basis of the correct diameter, such excess of diameter will often be the solution of the difference found between the surveyor's measurements and the weight alleged to have been used by the contractor. Reinforced concrete work being designed on the assumption that the whole of the materials employed are exactly in accordance with the specification, a reduction in area of the bars is most serious.

The ultimate strength should be taken at not less than 60,000 lb., and not more than 72,000 lb. per sq. in. It is necessary to keep a very careful watch upon every piece of steel that is brought on to the site.

The elastic limit is also of the utmost importance, as although steel might have a high ultimate resistance, the elastic limit might be so low that in case an accidental load is placed on the work, a sudden collapse might take place; whereas by use of material with a proper elastic limit, proper warning would be given before its sudden failure.

It is essential that steel should be of such properties as will enable it to take a gradual and uniform extension, thus indicating a uniformity of quality; and the contraction of area at fracture should not be less than 45 per cent., which will confirm the properties of equal extension.

A silky fracture indicates a uniformity and a good mild steel so far as the metal, as metal, is concerned. Granular or fibrous grain indicates brittleness and unequal quality.

Vagaries of Concrete.

I think it is safe to say that of all materials used in the building trade, concrete is liable to and does vary more than any other material. Even if every care has been taken to see that each unit is of its proper quality and strength, yet we have in the finished concrete to reckon with a very large amount of human element. One gang of men may produce concrete of the best quality, and another gang on the same work with similar materials may give very indifferent results. This depends a very great deal upon the head ganger, and upon the foreman who selects such ganger. With a good machine-mixer, the possibility of human errors is considerably decreased, but at the same time an improperly designed mixer is, in my opinion, more dangerous than mixing the concrete by hand.

A table was presented showing that concrete which has its setting somewhat retarded by sprinkling with water gives generally higher results than concrete which was allowed to dry under normal conditions. The question arises here, however, as to the consistency of concrete not only from the point of view of the strength of the concrete itself, but rather as to what consistency will give the best results in actual practice from the point of view of contact with the metal, resistance to crushing and shear; and although it is essential that as little water as possible should only be used, to prevent air-holes occurring after the water has been evaporated, I would feel inclined to use a concrete slightly wetter than as in the average practice in France, but certainly much drier than that generally used in England.

Comparatively wet concrete will not allow of its being rammed or "tamped", whereas, to get a drier concrete into its correct position, tamping and gentle ramming is essential. As the whole of the strength of reinforced concrete depends upon proper adhesion of the concrete to the steel, it is an essential factor that the concrete is gently rammed at every point.

The architect has therefore a much better chance of making sure that the concrete is properly placed in position and properly worked between the reinforcing metal, and the greatest trouble has been found to be with contractors wishing to make the concrete wetter than is desirable owing to the fact that a wet concrete is more easily placed in position with much less labour than a dry concrete.

A Seven-day Test Essential.

The usual period of the first test on concrete has until recently been at 28 days, but with important structures, to obtain tests at 28 days after the concrete is made is not going to be of very much use for early correction when the work is being rapidly pushed forward, and therefore a seven-day test is essential, so as to be able to detect immediately any error in any of the material.

At the present moment there are few tests at seven days, so that for the present the reasonable resistance of concrete at this period has not been definitely ascertained. Such tests in connection with the 28 days' tests will also give most useful information with regard to when it is safe to strike the centering; and, when one considers the failures that have taken place owing to the centering having been removed too quickly, a seven days' test will undoubtedly become a recognised factor very shortly.

The 56 days' and 90 days' tests are desirable, as they show what is actually taking place in the work with regard to the increase or decrease in the strength of the structure.

The concrete up to about six months of age increases in strength fairly rapidly, but it is curious that from about six to nine months the increasing resistance to thrusting stress is very trifling, but after nine months the strength of the concrete again continues to increase at a more rapid rate, although not so rapidly as during the first six months.

For the purpose of research work, and where the importance of a job will allow it, it is most desirable that specimen pieces should be made in sufficient number so that each series of specimens are tested up to at least ten years of age; a number of specimens should always be kept, so that if anything should ever happen to any structure or part of same one is in a position to test the concrete, and the steel, of course, could be tested from samples obtained from the actual work.

From the detailed results of experiments to ascertain the resistance of the thrusting stress on 64 cubes made under various conditions at Mr. Kirkaldy's works, many things might be learnt. At 28 days the highest result obtained was an average of 2,225 lb. per sq. in., and at 90 days the highest result was 3,554 lb. These two results can be taken as being the greatest amount of resistance that can be obtained from concrete made under the most favourable conditions, and it should be compared with the lowest results obtained, which are 1,026 lb. per sq. in. in 28 days, and 1,787 lb. per sq. in. in 90 days, with varying results between these two extremes; and the question arises as to which is the most probable result that would be obtained from

work in actual practice. In determining this it might perhaps be desirable at the same time to inspect the diagrams showing the results of experiments on concrete taken from the actual mixing platform on several works.

The Finished Structure.

A word with reference to the testing of the finished structure may not be out of place. Specifications often provide for the work to be tested with $1\frac{1}{2}$ times the load which the work has been designed to carry; a factor of safety of four is taken in the calculations to provide for inequalities of workmanship and materials, for allowance for fatigue of material under strain, and for isolated accidental excess loading—considering that with $1\frac{1}{2}$ times the safe load the concrete in compression is working up to 900 lb. per sq. in.; adhesion 150 lb. per sq. in.; 200 lb. in shear, and steel varying up to 22,500 lb. per sq. in. in tension, that by the application of such loads, the parts so tested may be permanently injuriously affected.

If the materials are tested as suggested in this paper, and professional supervision is given to the work, tests on the finished structure are not necessary; if it is desirable, then only the safe load should be applied, and if no undue deflection takes place no further loading can serve any useful purpose.

DISCUSSION.

Professor Henry Adams, F.S.I., M.Inst.C.E., in proposing a vote of thanks, said that the author was to be commended for emphasizing the need for all tests to be in accordance with actual practice rather than under laboratory conditions. It was for practical use that tests were wanted, and in all cases the conditions in actual practice should be taken into consideration.

In the course of a detailed discussion of the paper, Professor Adams said he supposed that the welds referred to in the paper were end welds—i.e., for the purpose of lengthening a bar; but there could be no possible objection to the electric welding in the crossing of the various bars. It was where tension came in that welding was objectionable. As a rule the strength of a weld was 80 per cent. of the original bar. The 30 per cent. referred to by the lecturer must have been an exceptional case.

Mr. E. C. P. Monson seconded the vote of thanks.

Mr. David Kirkaldy also supported the vote of thanks.

Mr. S. Bylander said that, with regard to the form of the test pieces, he certainly thought 4 by 4 was not satisfactory, the aggregate used being too large in size to be properly placed; a 6 by 6 would be much better. The strength of steel being 62,272 lb. per sq. in., he would like to know why Mr. Scott limited the tensile strength to 72,000 lb. He did not understand the author's reference to the elastic limit of steel. His (the speaker's) idea was that it was necessary to have a high elastic limit, because it was really that which determined the safety of the structure, and not so much the ultimate strength of the material. They did not wish to have a very hard steel, because it was brittle.

Mr. G. A. T. Middleton said it had rather surprised him that both Mr. Scott and Prof. Adams had remarked upon the fact that cement was now tested by weight per cubic ft., and he thought it would be very much better to test by specific gravity.

Mr. P. M. Frazer, said that the general contractors had taken to reinforced concrete construction as ducks took to water, and he wished the same could be said of the professional man. It was quite remarkable to go on a job and see the way in which the contractors turned out consistently good work with better results than could be boasted of by those on the Continent or in America. The difference between hand mixing and machine mixing was very real, and an analogy might be drawn between a stoker of a boiler and a stoking machine, the latter giving far better results than the human stoker.

Mr. J. Herbert Pearson said that Mr. Scott had called attention to the difficulties which arose in getting a joint between two sections of reinforced concrete dealt with on two separate days; but the speaker thought that, under certain conditions, it would be impossible for the second section of concrete to follow immediately after the first, and in those circumstances he would like to know what the lecturer would suggest to get over the difficulty of preventing any water percolation.

Mr. H. T. Cover asked whether Mr. Scott had made any experiments regarding the strength of concrete floors. He came across a case recently where some workmen were lifting a load of two tons on a jack with a base 4 in. square placed between two steel joists 5 by 3 of 4 ft. span and 4 ft. apart, with six inches of concrete.

Mr. Percy B. Tubbs remarked that the supervision of reinforced concrete work put additional responsibility on the architect, who, if he undertook such work, should be paid not only for his professional services but for acting as clerk of works also.

Mr. A. Alban H. Scott, in the course of his reply, said that with regard to the question of the weight of cement, he believed that in the original report of the R.I.B.A. Sub-Committee on Reinforced Concrete, the weight was specified 76 lbs. per cub. ft., and the tests in the tables referred to were made under the same conditions, and since then the 90 lb. had been adopted. The question of the weight or measure of cement was far from satisfactory, however, and as Mr. Frazer had said, they always adopted a method of testing the weight of cement per cub. ft., and they would see at the bottom of one of the tables he showed the extraordinary results they obtained. They so increased their cubic measure as to accommodate not less than 90 lbs. It was a fairer way, both to the contractor and to the client, and it certainly got rid of carelessness on the part of workmen in throwing aggregate into the measure. There was enormously hard wear on any form of weighing machine; the scales must be out of truth within two or three days of their use. The only real test on the job was a test of the structure, and that he was dead against unless they could load to the superimposed load for which the structure was designed; and he almost hoped that when the L.C.C. regulations came into force some of the work which would be subjected to a test of $1\frac{1}{2}$ would collapse without loss of life, because in his opinion it was asking for trouble, and weakened the structure. Mr. Kirkaldy had very kindly lent some of the test specimens before them, and had offered to explain them at the conclusion of the discussion. He was glad to hear that Mr. Bylander did not agree with the 4 by 4 cube for testing. It was not sufficiently large for testing with the aggregate they

were using—namely, $\frac{3}{4}$ in. The reason he advocated a 6 by 6 cube was that it was better made and was more of a shape which was adopted in work generally, and with a circular column they were all the time tending to get a very much better and more consolidated mixture than they did with the square one, because in the former they could ram so much better than with the latter, and with the square one they could not get into the corners. With a 6 by 6 by 12 a double quantity of material would be required, and on a big job the cost of material submitted for testing was quite considerable. He did not think a 6 by 6 by 12 would serve any further purpose than a 6 by 6 cube. The former was apt to bind the material for perhaps one-hundredth part of a second longer than the latter, which was quite large enough to give them results which they could reasonably expect to get in a job. Mr. Bylander had asked why he limited the strength of steel to 72,000 lb. His answer was that if they got it above that, there would be a tendency to increase the carbon, and with high-carbon steel there was a possibility of a grain forming in the metal. If they increased the strength of steel beyond 72,000 lb. there was a tendency eventually to increase the safe load. It was impossible, he thought, to increase the basis of 60,000, and it gave the steel people a range of 12,000 lb., which was ample. If they allowed them a greater range than that, it opened up the possibility of makers using a foreign loom, whereas with British steel they had a better chance of getting fineness in the metal. The term "Coarse Material" was now used instead of "Aggregate" in all official documents, and he had adopted it.

HIGH DAMS OF GREAT LENGTH.*

By REGINALD RYVES, Assoc. M.Inst.C.E., M.C.I.

The special study which the author of this paper undertook, and on the results of which this paper is based, was a study of high masonry dams of such length that they may be regarded as dams proper, and in no sense as structures partly held up to their work by the sides of the river valleys. While the great size of the two dams contemplated rendered economy of material an important matter, this was absolutely dominated by the still more important consideration that the dams must be in all respects stable and lasting. It was also desired to avoid as far as possible the use of Portland cement.

Leaving aside all other considerations arising out of the study, this paper is confined to those connected with the building of dams of a great length, the whole of which length is more than 140 ft. clear of the ground, and a part of which may be as much as 180 ft. or more to hard rock. The height of 185 ft. clear was adopted for purposes of calculation. The subject of the paper is, further, kept within somewhat close limits by the condition that the highest calculated maximum stress in the masonry must not exceed 12 tons per sq. ft., at any rate by Bouvier's computation, though by Unwin's computation a somewhat more severe stress may be allowed.

There are four distinct types of dams for wide valleys, and entirely excluding the

*Extracts from a paper read before the Concrete Institute on March 14th.

dam which is a single arch, in plan, and the dam which is, in its lower part, practically a plug in a gorge. The four types are: (1) The mass dam proper, designed on the ordinary theory; (2) the parallel slice dam, which is designed in exactly the same way, but with more concentrated water loads; (3) Captain Garrett's type, or the dam of arches in which the weight of the arches is partly taken into account, but the dam otherwise designed as a gravity dam with concentrated water loads; (4) the author's proposed thrust buttress dam of arches, in which the whole of the water load is taken by masonry, in direct compression, and neither the weight of the buttress nor the weight of the arch is taken into account as regards stability, except for resistance to sliding bodily when the ground is comparatively soft.

Having discussed in detail the other three types of dam, the author stated as follows the propositions which he himself puts forward. The definite propositions which the author puts forward are:—

(1) That there is no precedent for the building of a mass gravity dam in an unassisted length more than 150 ft. clear of the ground.

(2) That our present ideas as to maximum stresses allow of the building of such a dam for heights only slightly in excess of this.

(3) That since the improbability of the stress actually reaching $p \sec^2 \phi$ increases as the slope at the down-stream toe is flattened, we may, for heights above 150 ft. and for angles flatter than 45° , allow one maximum computed stress for $p \sec^2 \alpha$, and a computed stress for $p \sec^2 \phi$, some 50 per cent. higher. This applies both to mass gravity dams and to parallel slice gravity dams, and perhaps also to Captain Garrett's battered buttress type.

(4) That interrupted dams, the gaps being spanned by horizontal or inclined arches, or by beams, offer the important advantages—

(a) Economy of material; (b) absence of contraction cracks and temperature stresses; (c) maintenance of waterway during construction; (d) cheapness of sluices; (e) in some cases a wider choice of materials and of methods of building; (f) and that the interrupted dam, or dam of spans, may be considered as an alternative to the mass gravity dam for great heights, especially as regards the height clear of the ground.

(5) That the author's design for a thrust buttress dam is suitable for heights up to 200 ft., with materials allowing of a compression stress of 10 tons per sq. ft. and up to 300 ft., if a stress of about 16 tons per sq. ft. be allowable.

(6) That none of the dams at present built are thrust buttress dams, either as regards the method of building or in practical effect.

(7) That in order to avoid tension near the upstream toe of a high mass dam, or of a gravity buttress in a dam of spans, it is desirable to make the connection with the rock somewhat as follows:—

The upstream third of the base a flat surface with no bonding and no trench;
The middle third bonded, but not deeply trench;

The downstream third effectively bonded with the rock cut in faces at right angles to the thrusts of the masonry.

(8) That when a high dam is to be built with a large part of its total height from foundations below the bed of the reservoir, it may be worth while to relieve that part of the upstream face from water

load by directly draining it through the dam.

(9) That dams in the tropics, or near the tropics, with downstream faces towards the Equator, or facing east or west, may with advantage be provided with temperature skins to a depth depending on the extent to which daily or annual changes in temperature deprive the outer shell of the face of its value, as material resisting compressive stress.

(10) That a long and high mass dam may usually be, with advantage, built with gaps in the masonry across the length, these gaps being filled when the temperature of the dam is judged to be nearly at or a little below its future mean temperature. If cracks are specially to be guarded against, the gaps may be filled at the end of the cool season, and after the temperature of setting has subsided—that is, when the average temperature of the masonry is at its lowest.

(11) That the grading of material in a large dam should be such that the large stones are not "plums" or displacers, but play the part of the stone in ordinary concrete.

DISCUSSION.

The following took part in the discussion which followed: Mr. Charles F. Marsh, M.Inst.C.E., M.C.I.; Mr. Ewart S. Andrews, B.Sc. (Lond.), M.C.I.; Mr. E. Fiander Etchells, F.Phys.Soc., M.Math.A., A.M.I.Mech.E., M.C.I.; Mr. Morgan E. Yeatman, M.A., M.Am.Soc.C.E., M.C.I.; Mr. S. Bylander, M.C.I.; Mr. Maurice Behar, M.C.I.; Mr. A. Alban H. Scott, M.S.A., M.C.I.; Mr. W. G. Perkins, M.C.I., District Surveyor for Holborn; Mr. R. Dudley, A.M.I.C.E.; and Mr. E. P. Wells, J.P., Vice-President, C.E. (chairman).

RANSOME STEEL PILING.

The Ransome-verMehrs Machinery Company, Caxton House, Westminster, have issued a booklet describing and illustrating the Ransome corrugated interlocking steel piling, known as "Type D Section." The metal in this section is distributed so that the neutral axis of the section passes through the centre. The absence of metal on the neutral axis itself results in an exceptional strength for a given weight of material; the practical result claimed being that one ton of this piling when interlocked covers a greater surface area than can be obtained with any other section of equal strength. The section is described as an outcome of an effort to produce a material designed exclusively for piling work, as distinct from the adaptation of an existing section for a strange duty. A Ransome Type D single pile has a sectional area of slightly over nine square inches, whereas a timber pile of equal strength would require to have a sectional area of at least 80 square inches, and would need to displace about nine times as much material, when being driven, as the steel pile would displace. The pile is much easier to drive than timber, and with drawing and re-driving can be pursued

almost indefinitely. These steel piles are all interlocking; the interlock being of such a character that it is watertight, without any necessity for caulking or clay puddle. Hence, for cofferdam and allied construction, only one row of Ransome piling is necessary, as distinct from the usual timber formation of two rows of timber with clay puddle rammed between. For driving, any standard form of pile engine and frame can be adopted, except in the case of light work in soft ground, where the section can be driven in moderate lengths by hand with wooden mauls. For specially heavy duties this system of piling is readily adaptable. The corrugated form of the pile renders it light relatively to its strength, and thus economy of first cost and in freight charge is secured. These piles have been supplied to the new Rosyth Naval Base, now in course of construction.

INTERNATIONAL SMOKE ABATEMENT EXHIBITION.

An important exhibition was opened on Saturday last at the Agricultural Hall, under the auspices of the Coal Smoke Abatement Society. It comprises all the latest appliances for the use of smokeless fuels, both in the house and in the factory. There is a large and attractive display of gas appliances for cooking, for hot-water supply, for the heating of houses, shops, churches, and other public buildings, as well as for furnace work. The fogs of London have been largely diminished in intensity of recent years as a consequence of the rapidly extending use of gas for fuel, but much remains to be accomplished before the air of the metropolis can rival that of Paris or New York, and it is hoped that this exhibition will do a great deal to stimulate the movement in favour of smoke abatement.

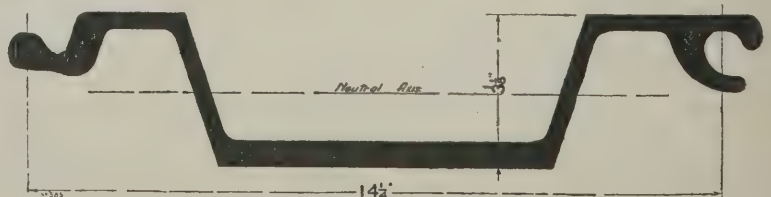
OBITUARY.

The late Dr. Phené.

At the last meeting of the R.I.B.A. the decease was announced, at the age of ninety, of John Samuel Phené, LL.D., F.S.A., F.G.S., Fellow, elected 1872. Dr. Phené's archaeological researches in Italy, Greece, Asia Minor, India, and Western Europe are well known, and the results of his labour have appeared in various publications, among others in the *Institute Transactions* of 1873 and 1878.

"What Town Planning Means."

This is the title of a 12-page pamphlet by Mr. George L. Pepler, F.S.I., just issued by the Garden Cities and Town Planning Association. It presents succinctly the valuable features of the Town Planning Act, and indicates the way in which its opportunities may be taken advantage of. Copies of the pamphlet, price 1d. (2d. post free), may be obtained from the Garden Cities and Town Planning Association, 3, Gray's Inn Place, W.C.



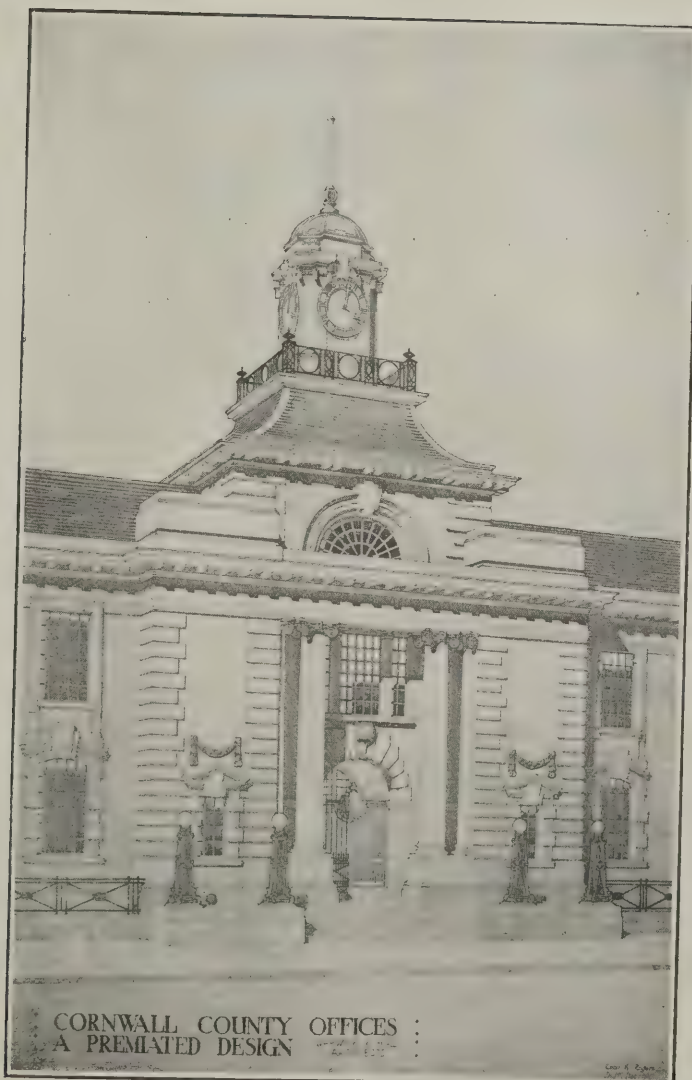
RANSOME INTERLOCKING PILING.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 3rd, 1912.

Volume XXXV.

No. 898.



CORNWALL COUNTY OFFICES :
A PREMIATED DESIGN

WARWICK AND HALL, A.A.R.I.B.A., ARCHITECTS.



BERKSHIRE COUNTY HALL, READING: PRINCIPAL ELEVATION. WARWICK AND; HALL, A.A.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

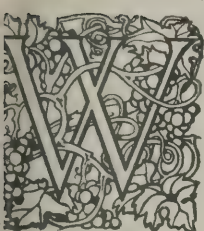
APRIL 3rd, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 898.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The Control of Advertisements.



I have before us the terms of a Draft Bill prepared for introduction into Parliament, if possible, during the present year, under the title "The Advertisements Regulation Act, 1912," a sequel to the "Advertisements Regulation Act 1907," which is referred to as the "Principal Act"; with the intention that, if the second Bill becomes law, the two may be cited together "The Advertisements Regulation Acts 1907 and 1912." The amending Bill is framed by the same Society which framed and brought in its predecessor--the Society for checking the Abuse of Public Advertising, shortly known under the mystical-looking title "Scapa," a shorthand word framed out of the capital letters of the principal words of its title. The reasons for endeavouring to pass an amending Act are that the first Act was found difficult to put into effective operation in some respects, and required its machinery amended; but before considering principles of operation, we may draw attention to the importance of the subject, as affecting generally the enjoyment of life, and in some respects affecting more specially the interests of architects and of architecture. We have become so used to see every available area, many which ought not to be available for such a purpose, crisscrossed with huge and glaring advertisements, that many of us perhaps hardly realise what a difference there would be in the aspect of towns more especially, but to some extent also in the country, if a legal check could be put upon the size and the omnipresence of advertisements. They have become, in their effect on the senses, somewhat like a noise which goes on so continually that our ears cease to notice it, and are only conscious what a nuisance it is when we realise the sense of rest and peace following its sudden cessation. Take the case, for instance, of advertisements in public vehicles. We are used to seeing every panel inside an omnibus or tramcar occupied with advertisements of soaps and other articles, and we cease to think about it, until we realise the sense of order and neatness produced when we get into the tramcar of some company which has preferred to keep its vehicles free of this nuisance. Our railway station walls are covered with disorderly patchworks of ugly pictures advertising goods that most of us do not want; pictures generally of the most vulgar order both in regard to design and colour, amid the crowd of which it is often difficult to find the face of the station. The sight of a good, clean brick wall, such as that which has still been preserved in the recently opened South Station at Waterloo is a kind of oasis. Then there is the interminable succession of huge advertisement pillars of quack medicines along miles and miles of our principal railway lines. We are getting hardened to these, and they are getting to be accepted as part of the natural order of things; but if we could find them all some day suddenly removed, we should become conscious of the improvement they had been to the landscape through which they rain takes us.

In our cities the covering of every hoarding with advertisements has the effect of giving a sordid appearance to the town, especially as the main object with each advertiser is to attract his special advertisement should be more glaring and character than any other. It has been main-

tained by some apologists that these roads' of advertising posters are of more interest than a blank space; but in London at all events there has been a decided move of late years in favour of treating temporary hoardings in an architectural manner, with something like a design in the supports and artistic lettering in the announcements painted on them. All such attempts are rendered nugatory by the presence of a mixed array of posters arranged with neither order nor design. But perhaps the manner in which architectural effect in cities is most injured is by the huge scale of lettering which is constantly seen in the shape of solid built-up letters affixed to the fronts of buildings; letters of a type which would be unobjectionable on a small scale, but which from their huge size destroy all sense of scale in the buildings and in the general appearance of a street. And when at night we lose sight of these, there is provided for our enjoyment a whole army of monstrous flashing advertisements by which night is rendered hideous and all sense of repose and beauty in a lighted city is destroyed.

Our own impression has always been that the best and most comprehensive means of keeping the advertisement mania within at least reasonable limits would have been found in the imposition of a tax in proportion to the surface area of placards or the size of lettering, accompanied by an absolute veto on the use of flashing advertisements at night. The idea of the tax has, we know, been suggested and seriously considered by those who are anxious to see the nuisance reduced, but it appears for some reason to have been discarded as unworkable. Why it should be so regarded we do not understand, unless it is supposed that Parliament would not be likely to sanction it. In Parliament there are, of course, objectors to everything, and there are always influential upholders of any special form of nuisance whose interests are involved in maintaining it, and who have their representatives or supporters in the House of Commons. But a tax upon size seems the most efficient and comprehensive weapon to use; it is quite impartial and treats all alike, and it reduces things to a simple and practical standard of definition. It might be very difficult to fix any standard of good or bad taste in regard to posters, and to admit some and refuse others; there would be endless differences of opinion on such a basis; but measurement of size is a plain fact about which there can be no dispute, and the result of fixing such a standard would be followed at once by an immense reduction in the number and size of advertisements, as it would not pay to indulge in them to anything like the present extent. It would probably be the only way of getting rid of the field-posters along the railways, as these are placed in numbers of different rural districts the authorities in which could never be brought to act in concert; whereas a tax, added to the rent already paid to the owners of the fields in which they are placed, would probably at once render them unremunerative.

Returning to the proposed amending Bill, we find the reasons stated for bringing it forward are that the wording of the principal Act left it too restricted in its operation. It authorised local authorities to make by-laws for restricting or preventing the exhibition of advertisements "in such places, and in such manner, or by such means, as to affect injuriously the amenities of a public park or pleasure promenade, or to disfigure the natural beauty of a landscape." This is evidently very limited in its application, or might be made so, as the reference to public parks

implies the exclusion of other parts of a town and its neighbourhood from the provision, and the mention of "natural beauty" in a landscape implies the exclusion of any landscape which might be held not to be beautiful. The amending Bill provides in Clause 2 that the exhibition of all advertisements "on land or buildings" shall be subject to regulations, and that powers may be taken to prohibit "the exhibition of advertisements upon any land which do not relate thereto, or to the occupier thereof, or to something done or to be done thereon or in relation thereto." That clause would get rid of the advertisement boards along the railway routes (which is probably what was in the minds of the framers of the Bill), if all the local authorities were to act upon it; but will they, or any of them, do so? The whole legislation, as proposed so far, is after all only permissive; it merely gives power to local authorities to make such regulations if they choose; and unfortunately local authorities are for the most part very difficult to move in such matters. It may be the only form in which there is a chance of obtaining legislation at present. But a tax imposed by Government would have been far more widely and certainly effective.

*The L.C.C. Draft Regulations for Reinforced Concrete.**

THE London County Council, under their General Powers Act of 1909, Clause 23, were authorised to formulate Regulations with respect to buildings wholly or partly of reinforced concrete.

The subject has been considered by a Joint-Committee representing the Council, the Surveyors' Institution, the Royal Institute of British Architects, and the Concrete Institute. Draft regulations have been drawn up as a result of their investigations, and notice has been given by the Council of their intention to apply to the Local Government Board for the necessary confirmation.

As it is only through the enterprise of the technical Press that any intimation was given to those chiefly interested of the existence of draft regulations, it would appear to be essential that the opinions of builders and professional men with regard to them should be obtained with as little delay as possible.

The Regulations, which consist of no fewer than 160 clauses, have evidently been drawn up with considerable care, and reflect no small credit upon everyone concerned; but, even with the utmost care in drafting, it is obviously a matter of great difficulty to frame long detailed regulations intended to cover a large field of new work in the precise words which will best avoid expensive and troublesome differences of opinion between those who have to administer the Act and those who desire to use this method of construction with due regard to safety and economy.

It is worthy of note that in America, where practical experience in reinforced concrete is much more extensive than in England, the latest Regulations for New York (published in this Journal of February 28th, 1912) are much more brief, and leave the authorities far more latitude for new developments in theory and practice than is the case with the proposed regulations for London.

It has been suggested that the new Regulations attempt to usurp the functions of a theoretical text book. No reasonable objection can, however, be taken to their stating the theoretical considerations with regard to which the stipulated limiting stresses have been fixed; and this they do with admirable clearness and brevity. But any such theoretical statements should be complete; they should not preclude other methods of calculation, and they should most decidedly be subject to automatic periodical revision. It is inconceivable that the last word can possibly have been said upon the theory of a subject of which barely one professional man in ten is acquainted with even the principal formulæ. In fact, a leading English text book even expresses strong doubts as to whether the *whole* of our present theory may not be based upon wrong lines. However that may be, the notes on the subject which have been contributed by Mr. Percy Waldram, and will be found in another

part of the present issue, seem to us to be worthy of the most earnest attention of all who are directly or indirectly concerned, and especially of those who are charged with the duty of rendering the proposed regulations as perfect as the present state of knowledge will permit. To this end Mr. Waldram's notes will no doubt be welcomed as a valuable and an important contribution.

The Society of Architects.

THE circular which has been issued by the President of the Society of Architects to its members, and which we presume to a good many architects outside its ranks (for it includes a paragraph inviting all those in favour of Registration to join), tends to confirm our opinion that the scheme of amalgamation with the Institute is not likely to be renewed; there is evidently no expectation of it; and the Society seems desirous to return to the *status quo*, as the only Society which has made Registration its principal aim. The insinuation that too little was promised to the Society in return for what it was to concede is rather absurd. The concessions which the Institute Council were prepared to make to the Society in case of amalgamation were, in regard to some points, almost preposterous, considering the relative position and history of the two bodies, and were evidently so regarded by the general meeting to which they were referred. The policy of the Society, as implied in the last paragraph of the President's circular, seems to be rather in the nature of telling all those architects who are in favour of Registration that "Codlin's the friend, not Short"; that if they really desire Registration, let them at once join the Society which has always made Registration its main object. This situation becomes rather humorous.

A Protest Against Official Architecture.

THE Glasgow Institute of Architects, through their spokesman, Mr. A. N. Paterson, A.R.S.A., made last week a very timely and moderately worded protest against the proposal to place the extension of the Municipal Buildings in the hands of the City Engineer. That they made the protest to some extent in their own interests, admitted was true; but they also made them mainly in the interests of the community. It might be taken for granted that it was both the duty and the desire of every member of the Council to secure the best results from the expenditure of public money on its buildings, and that it could hardly be the case if such work as this were entrusted to the City Engineer, who was necessarily much engrossed in administrative work. Other reasons might have been added against the employment of an engineer on purely architectural work; reasons probably in the mind of the speaker, but which it was thought better not to insist on. Mr. Paterson also pointed out, what is undeniably true, that it was a manifest hardship to the architects of Glasgow who paid rates and were therefore contributing to the upkeep of the City Engineer's department, that they should find this departmental officer turned into a favourable competitor. We will add another argument which might have been adduced, but was not. The Glasgow Municipal Building is the chief executed work of an eminent architect, the late Mr. William Young, who was subsequently appointed architect for the War Office, but died before the building was fairly commenced. There can be no doubt that Mr. Young would have had the strongest objection to the building being put into the hands of the City Engineer for extension; it is work for which an architect is needed. This practice of putting municipal architecture into the hands of officials, instead of employing the best architectural talent available, is on the increase, and ought to be strongly protested against. We are glad to observe that the local Press appears to have entirely supported the architects, the "Glasgow Herald" remarking that there were few cities in which such a proposal as that of the Town Council would be seriously entertained, even if it were made. We fear that is hardly the case, but we are glad to read so strong an expression of opinion on the subject in an important daily paper.

*See "Architects' and Builders' Journal," December 6th, 13th, and 27th, 1911.

On What is Wanted in Houses.

THE last issue of the Institute "Journal" gives a considerable portion of the paper recently read by Mr. Percival M. Fraser before the Institute of Sanitary Engineers, on "The Modern House." It appears that Mr. Fraser had asked a number of distinguished men and women to send him answers to the following questions: (1) "What has struck you as the worst point about an average house?" and (2) "What is the greatest improvement you have met with in building or in the fittings?" We are not given any list of the "distinguished men and women" to whom the questions were sent, but we are given the names of some of those who replied. They are nearly all novelists or dramatists. We do not know that the opinions of eminent novelists are of more value on such a subject than those of any other class of men who have attained distinction, but there seems to be an idea in the minds of many men that if an author has obtained celebrity in a literary sense, his opinion on every subject must be worth having; a position which the authors themselves for the most part fully endorse; the courageous manner in which novelists will pronounce (through the mouths of their characters) the most positive opinions on questions of art of which they evidently know little or nothing is often rather amusing.

A list is given by Mr. Fraser of the things objected to in connection with the "average house"—the "worst points" which these literary critics discover in it. The first is, "The large hall for a small house, being unsuited to English requirements"; why unsuited we are not told, but it is rather an odd coincidence that the large hall has just been recommended in a paper read at the Architectural Association, as affording a kind of general sitting-room or neutral ground for gentlemen and ladies. We should have said that a large hall is just the arrangement to give a little dignity and an effect of spaciousness to a small house, and that there is, in fact, everything in its favour and nothing against it. Another of the objections was to "sliding sashes" instead of casement windows. It would be interesting to know what was the reason for objecting to them. The sliding sash is really, for a cold country, the most convenient of all forms of window; the reasonable objection to it is the necessity for casings and pulley-weights, whereas the casement window can be fixed in solid frames. "Cupboard accommodation always inadequate" is an objection only too well founded. Many are the opportunities for this which are neglected in the average house. "No proper accommodation in rooms for furniture" is another reasonable objection; and so is "windows too small and used without discrimination." As we have before pointed out, the present popular idea of the picturesque house almost always means small windows, which may look very nice from the outside, but are not in accordance with the best hygienic conditions. "Basements, a great evil," is true, but they are unavoidable in closely packed town houses.

Coming to the answers to the second question—What are the best improvements noticed?—we find first "a bath and lavatory basin directly available from each bedroom." That is a counsel of perfection, certainly rarely met with in the average English house; it would be found in many good modern French houses, but the French house rarely provides so many bed-rooms as would be found in an English house of the same general dimensions, the French not regarding large families as a probable or desirable condition of life. A washing recess out of a bed room, tile-floored and provided with a bath, is a most desirable addition which is sometimes, but not often, to be found. English house-planning certainly needs improvement in this respect; and one thing which is seldom provided, but ought always to be, is a special bath-room for the servants of the house. The employment of double walls, affording even temperature, is a doubtful good; it means hollow spaces that can never be got at and examined. "The centralisation of the heating system" is certainly desirable. One correspondent notes with satisfaction "the great development in tin, light, cheap, and sound-proof partitioning"; whether it is always as sound-proof as might be wished is a question,

but there is no doubt that there have been of late years great improvements in the construction of partition walling. Another improvement that is noted is "the designing of details to avoid lodgment of dust"; a line of improvement to which attention was probably first drawn by the importance attached to it in hospital construction. It has a special importance there; but what is hygienic for hospitals is also hygienic for dwelling-houses, especially in towns, where dust is created and accumulates so much faster than in the country, and is of a more deleterious description.

One point which Mr. Fraser made in the course of his paper is worth special mention in these days of attempts at cheap cottages: "Nine-inch brick walls are quite inadequate in this country, except when built of sound bricks in cement and plastered with cement plaster on the outside or tiled." That points to one objection to the cheap garden city architecture of the day. It is the paradise of the nine-inch brick wall, which cannot be really accepted as the solution of the problem of economy, though we are inclined to think that even that is better than the "Spectator's" tarred timber.

Smoke Abatement.

AT the Smoke Abatement Conference last week, Sir Arthur Church appears, if he is correctly reported, to have summed up rather against the idea that smoke is the chief cause of the decay of stone in London buildings. He is reported to have said that it was not the carbon in smoke that did the mischief to building stones and mural paintings, but the sulphur compounds in the air which were absorbed by the carbon; and that the abatement of the smoke nuisance, or even its entire abolition, would not get rid of the injury and pollution caused by sulphuric acid. But if sulphuric acid has an affinity for carbon and is absorbed by it, surely in that case the smoke deposit is at all events the indirect cause of the decay of stone in London. Otherwise, why is it that stone that will, and does, last well in the country, will not last in London? It is satisfactory to be able to conclude, from the reports of other speeches, that those specially interested in London smoke abatement seem to have at last got rid of the fallacy that London fogs are due to the smoke. We used to have this continually dinned into us, in face of the fact that while there is a yellow fog in London, coloured by the smoke, you may find a white fog, quite as thick and impenetrable, just outside London. London fogs are due to the position of the city in the Thames Valley; the smoke makes them heavier and more disagreeable; it does not create them. Whether a thick London fog should remain a white fog, or should be thickened and rendered acrid by smoke deposit, seems to depend on the state of atmospheric equilibrium at the time, which decides whether smoke particles should be precipitated or not; it is a question of barometric pressure. Some of the thickest and most impenetrable fogs that have visited London within our recollection have had no evidence of smoke in them at all. That the greatest agent in the production of London smoke is the domestic fire is probably quite true, but it is not proved, as one speaker said, by the fact that the darkest fogs had been on Sundays and Christmas Days. We doubt the fact, in the first place; one of the worst fogs we remember was on a Christmas Day, but there have been as bad ones on other days, and in any case it may be doubted whether there are more fires in London on Sundays; on the contrary, there are likely to be considerably fewer; many people are out of town on Sundays, and the factories and workshops are not working; so that the argument seems fallacious. The increased use of gas both for warming and cooking is no doubt to some extent lessening the amount of smoke, and will probably do so to a greater extent in future, as the use of gas, for cooking especially, is on the increase. It cannot be denied, however, that a fire is the pleasantest way of warming a dwelling-room; there are many who will always prefer it; only legislation would put it down; and we are not likely to come to that. Grates designed to ensure a plentiful supply of air to the inside of a fire are the best preventives of smoke; for smoke really means imperfect combustion.

ARCHITECTS OF THE DAY.

MESSRS. WARWICK AND HALL, A.A.R.I.B.A.

THE opportunities which the open competition system affords to the young man in architecture are well shown in the case of Messrs. Warwick and Hall. This partnership comprises Mr. Septimus Warwick and Mr. Herbert Austen Hall, who have already carried out several important buildings as the outcome of public competitions, though they are both only thirty years of age. Before proceeding to deal with their work, a few biographical particulars may be given.

Mr. Warwick's architectural career commenced in the latter part of 1895, when he entered the office of Mr. Arthur Vernon, with whom he stayed for three years. Subsequently he was with Mr. George Walton and with Mr. R. S. Balfour, and when the latter joined with Mr. W. A. Pite he was head assistant in their office. Mr. Warwick was afterwards with Mr. R. Frank Atkinson for two years, during which time he worked on Waring's premises in Oxford Street and the Bromley Town Hall.

Mr. Hall, who is a nephew of the late Rev. Newman Hall, D.D., LL.D., commenced his training in 1897 with Mr. Philip Tree, of St. Leonards, with whom he stayed four years. He then went to Messrs. Silcock and Reay, of Bath, and later was under Mr. W. E. Riley, in the Architect's Department of the London County Council.

Mr. Warwick was elected a member of the Council of the Royal Institute of British Architects last year, and Mr. Hall has been a member of the Council of the Architectural Association since 1909, and was last year made honorary secretary.

They are both thorough believers in the competition system, though they think that there should be some modification in the customary manner in which competitions are conducted—more particularly they consider that there should always be a preliminary competition with sketch designs, involving the minimum amount of drawing, and that the architects thus selected to compete in a final competition should each receive a satisfactory honorarium.

It is frequently urged against competitions that they involve the loss of a great amount of energy and time, there being so many architects competing for a building which only one can get. Taking this view, some persons have endeavoured to work out the loss in actual figures,



CARVED SHIELD ON EAST ELEVATION.

and have thus stated a total sum of money and hours in order to prove the iniquity of the competition system. With these views Messrs. Warwick and Hall entirely disagree. They are of opinion that architects undertake a competition as, in a sense, a speculation, and they do so only when their time is not fully occupied by actual commissions in hand. From the business point of view it is urged that, competition or not, the standing charges of conducting an office are just the same, while the possibility of reward—in the shape perhaps of a good-size building—well merits the time and labour involved in the attempt to secure it. Messrs. Warwick and Hall feel quite satisfied with this view as applied to their own case, and

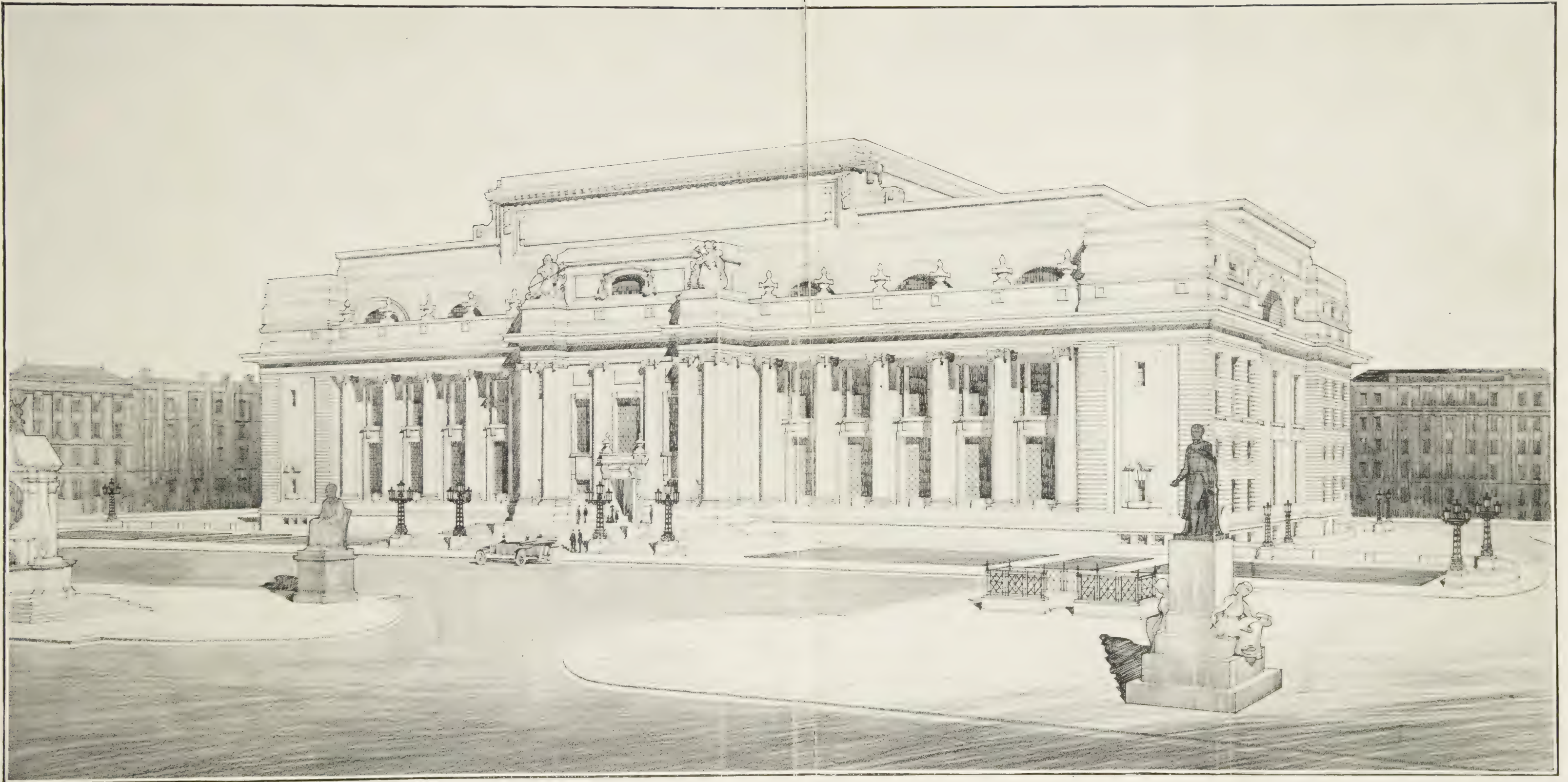


S. WARWICK, A.R.I.B.A.



H. A. HALL, A.R.I.B.A.





COMPETITION DESIGN FOR THE MANCHESTER LIBRARY AND ART GALLERY. WARWICK AND HALL, A.A.R.I.B.A., ARCHITECTS.



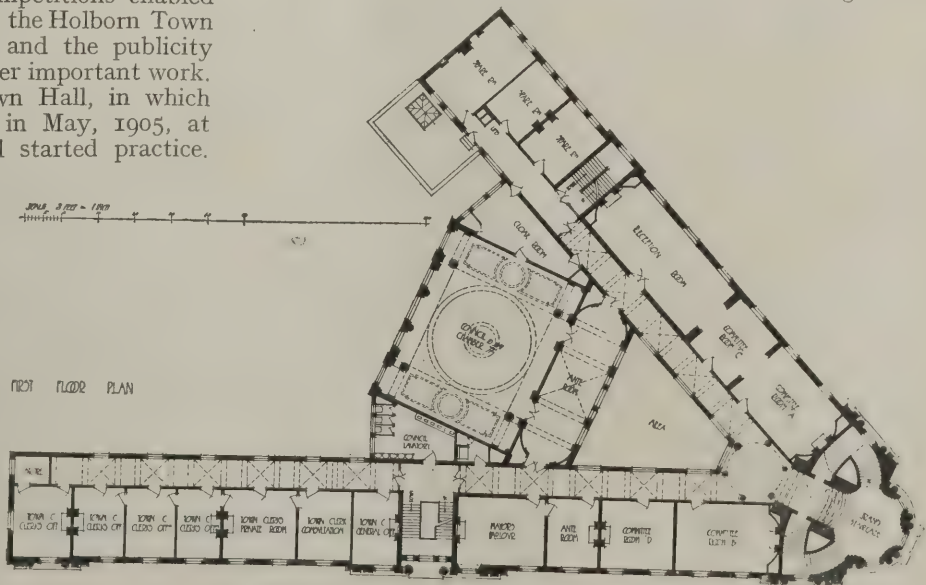
LAMBETH TOWN HALL: WARWICK AND HALL, A.A.R.I.B.A., ARCHITECTS.

the reason that they make all their own drawings; and as competitions to them are a pleasant exercise, done generally after the ordinary office hours, they enter upon the work with an undisturbed mind.

Undoubtedly, as stated at the commencement of this article, the competition system does offer the young man a chance which he would never otherwise get. There are plenty of modern instances of this, the two most prominent being Mr. Ralph Knott with the London County Hall and Mr. G. Gilbert Scott with Liverpool Cathedral. In the case of Messrs. Warwick and Hall, competitions enabled them to build the Lambeth Town Hall, the Holborn Town Hall, and the Berkshire County Hall, and the publicity thus secured has provided them with other important work. The competition for the Lambeth Town Hall, in which there were 114 competitors, was won in May, 1905, at which time Messrs. Warwick and Hall started practice.

It was completed in 1908, and the architects had the signal honour of having their first building opened by the present King and Queen, who were then Prince and Princess of Wales. In 1906 they were invited to take part in the limited competition for the Holborn Town Hall, which they won, and in 1909 they were the successful architects for the Berkshire County Hall (for which there were 177 competitors). They have also received premiums in competitions for town halls at Bury St. Edmunds, Burslem, Ilkley, Truro (Cornwall County Hall), Sutton Coldfield, Stoke-on-Trent, and Marylebone, and they were selected to take part in the

final competitions for the London County Hall and the Manchester Library and Art Gallery—which is, we think, a remarkable record for two young men. A large group of workmen's flats at Hackney was completed from their designs last year, and at the present time there is being erected from their designs at Perth, Western Australia, a fine office building for Messrs. Millars' Karri and Jarrah Wood Company. In addition to work of a public character, they have carried out a certain amount of domestic work, including houses at Romford, Bray, and Tunbridge Wells.



LAMBETH TOWN HALL: FIRST-FLOOR PLAN.

(the last-named for the Marquess of Abergavenny, K.G.), and alterations to "Killyon Manor," Co. Meath; 46, Sussex Square, Brighton; "River Mead," Rickmansworth; and "South Home," Chislehurst. They have also considerably enlarged a factory at Harpenden for Almagam, Ltd.

Some detailed particulars of the public buildings that have been erected from their designs are given below.

LAMBETH TOWN HALL.

This building occupies a triangular site at the corner of Brixton Hill and Acre Lane, S.W., the length of the principal façade (to Brixton Hill) being 274 ft., and the return elevation 200 ft. The building is so arranged on the site as to use the angle to advantage, leaving the greatest possible amount of space at the rear for future extension. The principal entrance and grand staircase are planned at the corner, and the rates office on the ground floor, with the council chamber above, are arranged on the central axis of the building. The principal entrance opens into a large circular vestibule immediately adjoining the grand staircase, at which point corridors branch off right and left to the borough engineer's and borough accountant's departments. The rates office, which is the principal room on the ground floor, has two separate entrances from the street, which entrances also serve the rates appeal room in the basement.

From the vestibule the grand staircase rises in two sweeps to a circular hall, whence it continues in one flight to the first floor. The walls of the circular hall are treated with plaster decoration, and the floor is paved with black, white, and green marble. Leading off the corridors on the first floor are the town clerk's department, the medical officer's rooms, mayor's parlour, committee rooms, and reception room. The council chamber, including the galleries, is 72 ft. by 40 ft., and has a dome 30 ft. in diameter. On the west side are five windows enclosed by Ionic columns and pilasters, and to assist the general lighting a lantern is provided in the centre of the dome. The dome is constructed of reinforced concrete, decorated inside with fibrous plasterwork and rendered outside with asphalt.

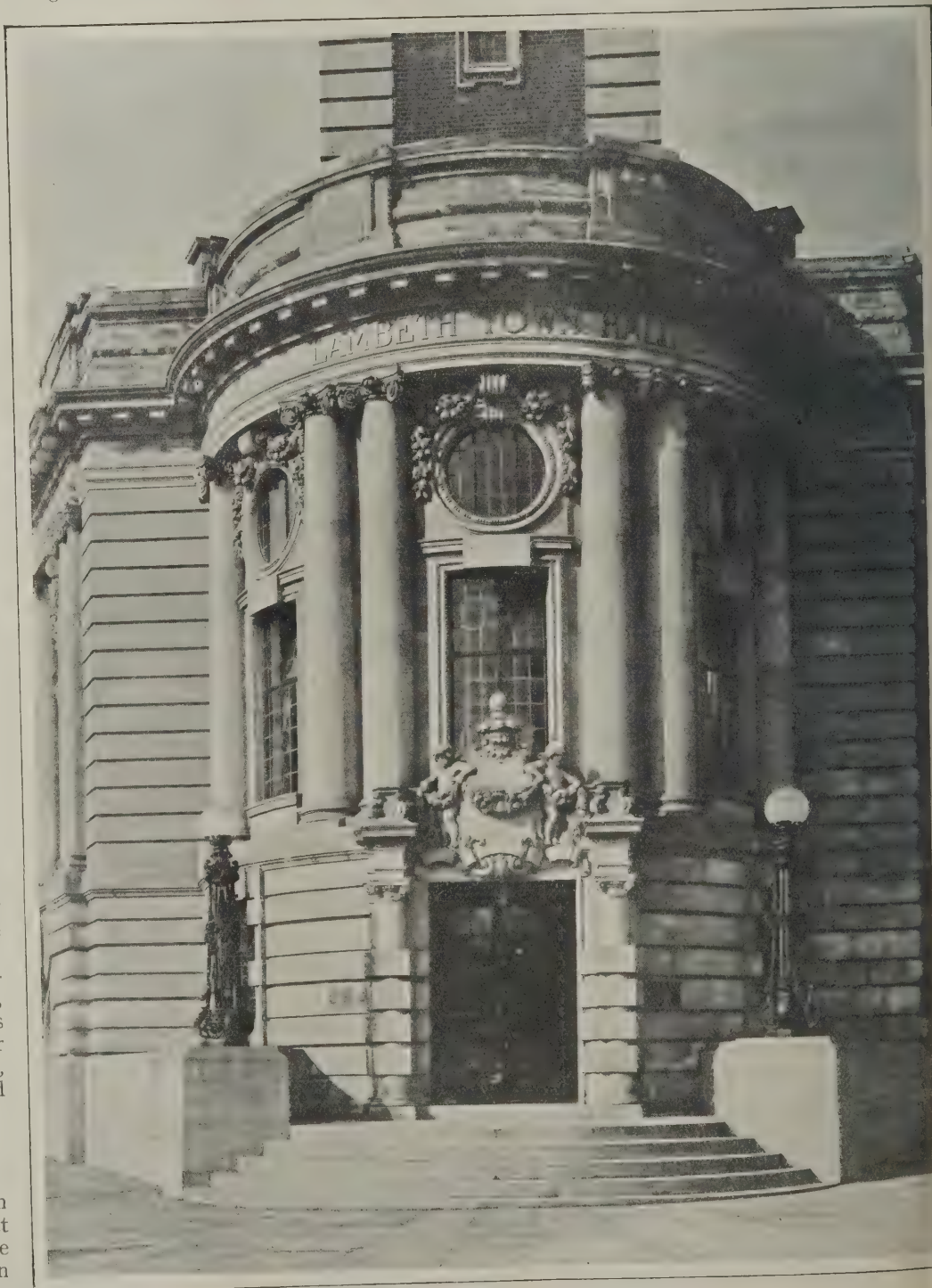
The elevations are carried out in Portland stone and narrow red bricks with wide joints, the base of the building being of grey granite, and the roofs covered with green slates. The tower, designed to accentuate the main entrance, is 134 ft. high, and has groups of sculpture on the four corners representing Art, Literature, Science, and Justice.

THE BERKSHIRE COUNTY HALL.

This building has been erected in the Forbury at Reading, adjoining the Assize Courts. It was opened in March, 1911. In its arrangement, particular attention has

been given to the planning so that members of the council can have direct communication from the hall of the Assize Courts, as well as from the front entrance of the new building. The committee rooms have been placed at the back of the building on the ground and first floors, so as to ensure privacy and quietness, in a position where they are easily accessible from the main staircase and lift. The main staircase (with passenger lift) is planned so that it will be equally convenient of access from the main entrance of the new building and from the Assize Courts, and is so placed that it serves each department centrally on the upper floors. The ground floor provides accommodation for the clerk of the peace and his department, the education secretary being placed on the first floor. The second floor is devoted to the county treasurer's department, land steward, and medical officer, and the third floor is utilised for the surveyor's department.

In the committee room on the ground floor there is some interesting woodwork, including a chimneypiece inlaid with a geometrical pattern in the centre panel and having on either side pilaster strips crowned by cherubs' heads.



LAMBETH TOWN HALL: MAIN ENTRANCE.



ST. GEORGE'S HOUSE, PERTH, WESTERN AUSTRALIA. WARWICK AND HALL, A.A.R.I.B.A., ARCHITECTS.

The elevations are treated in a broad simple manner, relying upon the general proportions for effect rather than the use of elaboration of ornament. They are carried out in red brick (five courses to the foot) with Portland stone dressings. The roofs are covered with specially made tiles on the Italian principle.

HOLBORN TOWN HALL.

This building adjoins the Holborn Public Library, with which the new portion had to harmonise externally so as to secure uniformity of appearance. For the accompanying two views we are indebted to "The Modern Building Record." Each floor has a large circular hall adjoining the main staircase and lift. The council chamber is on the second floor in a quiet position, and on the same level are the committee rooms, mayor's parlour, and ante-room. Immediately under the council chamber is the court room, in which the magistrates hear licensing and other business, and where rating assessments are conducted. The remainder of the building is occupied by the borough officials, whose departments are all self-contained.

SYLVESTER HOUSE.

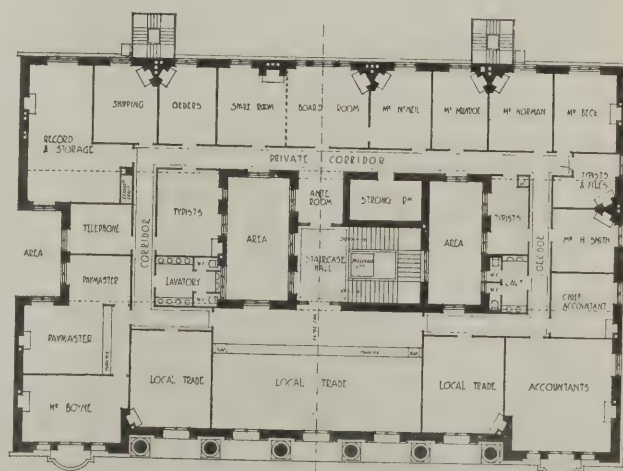
Sylvester House is a group of working-class flats which have been erected in Sylvester Road, Hackney, through the enterprise of Sir Richard Stapley and his partners, who have considerable interests in Hackney, and are keenly interested in housing matters. The building consists of four blocks, with a central garden for the use of the tenants, as shown by the photograph on page 349, the special aim having been to make the rooms as bright and sunny as possible. The dwellings provide accommoda-

tion for 80 families in tenements of two and three rooms; the rents varying from 6s. to 10s. weekly, according to situation.

ST. GEORGE'S HOUSE, PERTH, WESTERN AUSTRALIA.

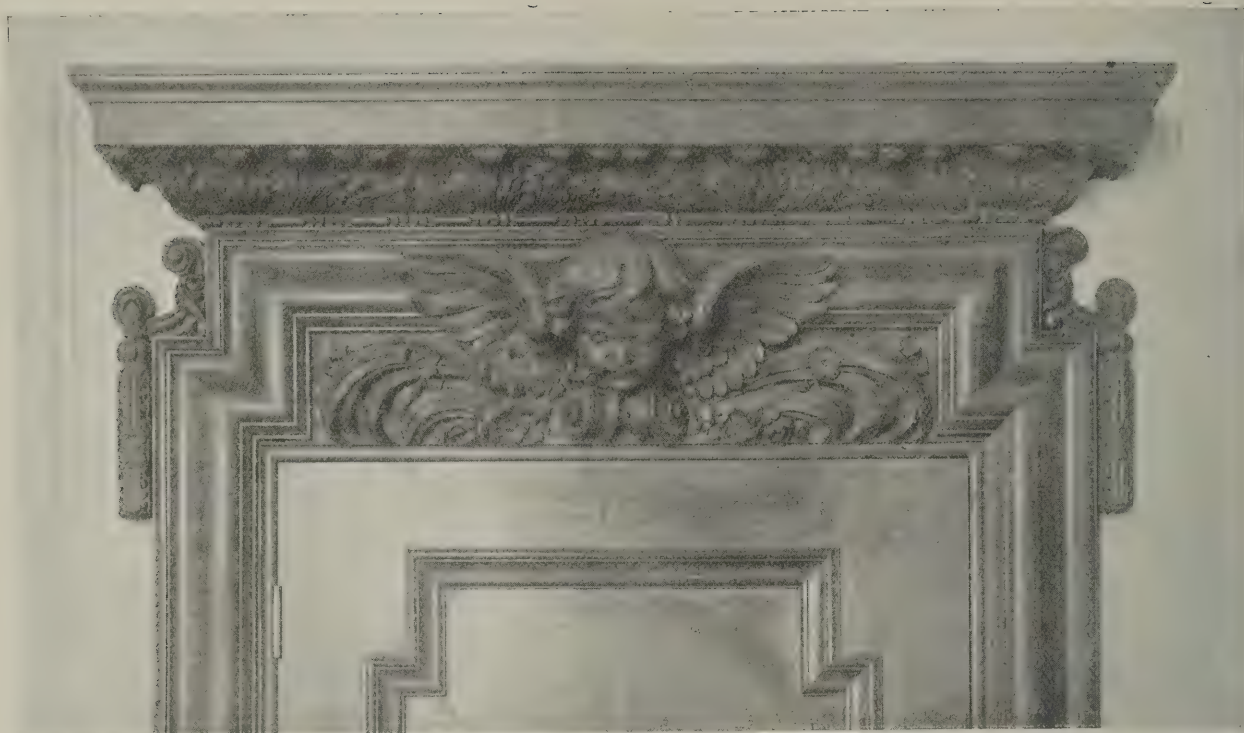
The increasing prosperity of Western Australia is nowhere more marked than in the capital, Perth, which is rapidly being transformed from a comparatively small town into an

ST. GEORGE'S HOUSE : PERTH : W.A. :
FOR MESS^{RS} MILLAR'S KARRI & JARRAH CO (1902) LTD



FIRST FLOOR PLAN

SCALE OF FEET



BERKSHIRE COUNTY HALL: OVERDOOR TO COMMITTEE ROOM.

important city. Among the many notable buildings in course of construction at the present time is St. George's House, which is being erected for Millars' Karri and Jarrah Company (1902), Limited, the well-known sawmill owners, who are the largest exporters of jarrah from the forests of Western Australia. The site of the building is in St. George's Terrace, the principal business thoroughfare of the city, containing most of the Government offices and leading at its western end to the Parliament House. St. George's House is being carried out externally in stone.

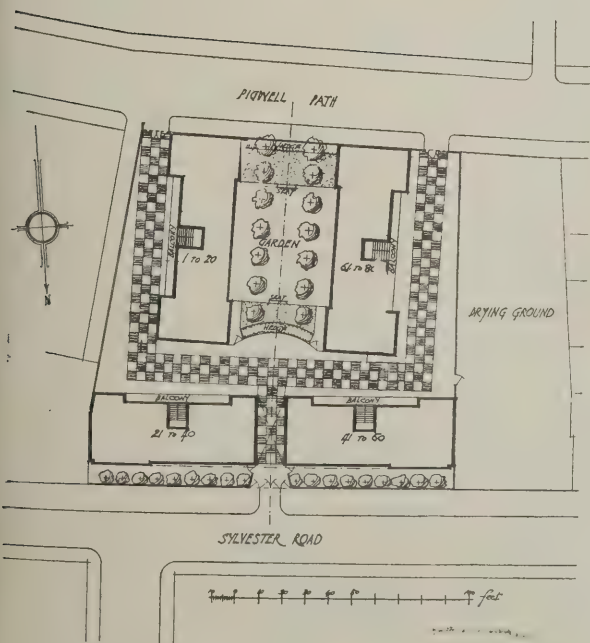
Internally the construction is entirely fire-resisting, and suites of offices are planned throughout the structure on the most up-to-date lines. The building is being carried out from Messrs. Warwick and Hall's drawings under the supervision of Messrs. Hobbs, Smith and Forbes, architects, of Perth. The perspective view on the preceding page we are able to give by courtesy of "Academy Architecture." In connection with it the $\frac{1}{2}$ in. detail on pages 356—357 may well be studied, as a good example of modern work.



HOLBORN TOWN HALL: COURT ROOM, FIRST FLOOR WARWICK AND HALL, A.A.R.I.B.A. ARCHITECTS.



HOLBORN TOWN HALL. WARWICK AND HALL, A.A.R.I.B.A., ARCHITECTS.



Block Plan.



View of Courtyard.

PATRIOTISM IN ARCHITECTURE.*

BY C. F. A. VOYSEY AND ARTHUR KEEN, F.R.I.B.A.

Mr. Voysey's almost passionate appeal for less imitativeness, and a greater regard for first principles, was perhaps somewhat marred by excess of fervour in the expression. It was nevertheless of very definite value as a stimulus to thought, as Mr. Arthur Keen very gracefully acknowledged in his trenchant reply.

MR. VOYSEY'S PAPER.

THE present age shows a strong tendency to swing towards the development of our imitative faculty, leading to conformity and collectivism, and away from the individual, creative, and idealistic manner. In this collectivist attitude we see a vast amount of deadly conventionalism, which is a form of tyranny oppressing the young and old alike.

A Definite Order.

A desperate endeavour is now being made to dominate men's conduct and to create what its advocates call a "national style," by imposing a definite Order of architecture on the young, and likewise upon the unfortunate competitor for public buildings.

Our educational system is based on the assumption that some foreign architecture is a fit study for an English student. And he is given every encouragement to travel in foreign lands, and by such means to gain fluency in the language of architectural forms without the laborious study of the national character and conditions that have given them birth. It cannot be denied that it is far more important to know from what general principles good work is produced than to have a knowledge only fitted to reproduce given examples.

Faithful Use of Local Materials.

Now we must observe that in all the finest examples of architecture throughout the world we find that the qualities we admire are due to the faithful use of local materials and conditions, the sincere expression of national character and aspirations: both of which qualities are strongly influenced by climatic and also geological and geographical local character. The climate of a country affects the light, and the light affects our enjoyment of textures and colours quite as much as of light and shade. Let us mark well this characteristic of the finest architecture—namely, that it grew mainly out of national conditions and national character, and was never a foreign importation. And a national style can grow up in no other way. We must recognise our conditions, material and intellectual, if we would obey the Divine law of fitness.

The Law of Fitness.

Are we working now on this principle? Are we not setting up a model drawn from foreign lands, and endeavouring to squeeze our requirements into it?

Having deprecated the holding up to admiration "American railway-stations designed closely on the model of ancient Roman baths," the author said: What wonder if ignorant people buy old barns and convert them into houses, forgetting that if they are good barns they must be bad houses, and if good houses very bad barns! As if good architecture were not the direct product of the purpose of the building. The general custom is to set the heart on a symmetrical façade and then squeeze our plan into it, making dark passages and lobbies, rather than

upset our symmetry. Do we not often use draughty, rattling wood sashes instead of stone windows and iron casements, in order to produce a Renaissance character in our building? Do we not give the same size window to a closet that we give to a banqueting hall if it happens to come on our main front? How often do we see puny little villas aping the manners of a ducal palace, porticoes and empty niches, cornices and broken pediments provided for the villa rented at £70 or £80 per annum! Showing clearly that the outside comes first in our calculations and the plan afterwards, and that we are wedded to a form that is not born of the parent of practical requirements, but the foster-child of a foreign-bred fancy. The structure is designed from without inwards, not, as it should be, from within outwards. I will not plead for either Gothic or Classic, but only that conditions and requirements shall dominate inside and out, and, above all, that the expression of thought and feeling shall be national and sincere. We do not want Chinese national character expressed in Piccadilly any more than Grecian or Italian character. We do not want the poor man's villa to ape the stately home of the wealthy.

The more we go to Rome, the less we shall know of London. The freshness and charm of foreign lands has belittled our reverence for our own country. And we are apt to forget that we have a climate and country different from all other nations. We cannot ignore this fact without loss of patriotism and national dignity.

Possibilities and Limitations.

Fitness is a Divine law, and the more we investigate Nature the more we become impressed by its fitness: therefore we do wisely to work on the same lines and strive diligently after fitness. Can it, then, be fit to use foreign styles to express English thought and feeling? The English architect down to the end of the Tudor period was content to learn and understand all the conditions of his own country, to understand the character of his own countrymen and to express their emotions and aspirations. He was keen to learn the possibilities and limitations of his material, and, in order that we may benefit by his experience in this direction, we should study all the pure English examples we come across, never forgetting that it is only unalterable technical qualities which we most need to learn, and not those accidents of passing fashion, or the changing manners and customs of different periods. It is very important that we should notice, for instance, the way the stone in different districts was used, rather than the existence of battlements or moats, which tell not of the history of building so much as of the manner of life of the people.

In our admiration for ancient examples we are apt to imitate the forms of obsolete features and miss the practical and essential truths concerning the fitting use of material. This disregard of national character and national needs and conditions is the foundation of nearly all our unpatriotic conduct and sentiment.

Un-English Architecture.

But, alas! the later Englishman has been unfaithful; he has turned his back on his own climate, and hardly speaks of it except to abuse it! And he has opened his arms to all the foreign material he can lay his hands on. And he raves about the most un-English architecture he has got, regarding it as so magnificent that all practical considerations must be waived for the purpose of providing an aesthetic approach to it.

The fact that our St. Paul's is well proportioned and gives us a pleasing sense of light and shade, and is big, justifies its existence in many people's eyes. But that it is a clever man's copy of a foreigner's expression of his own national character—albeit a foreigner's wise and clever use of his own conditions and requirements—never seems to be considered as in any way a proof that St. Paul's is an exotic and not a national growth. It is not the product of our climate or the outcome of our national life. It is a theatrical falsehood of the most prolific period of profligacy. The few wealthy who could afford to travel were intoxicated by what they saw, and they quickly lost their hearts to foreign beauties. And the universal law that we strive to reproduce what we love and admire led them to tear down their English houses and erect Italian, Renaissance, French, and other foreign examples in imitation of what they had seen and in boastful proclamation of their foreign experiences. We are now gradually awakening to the consciousness that the ravishing beauties of foreign architecture are always due to their being true and noble expressions of national character, governed by reverent regard for local conditions and materials.

Artificial Modes of Expression.

It is of very great importance that we should get at the truth of this matter, because our present method of education and the practice of our profession is steadily leading to an artificial mode of expression independent of the practical necessities of life. Our town halls, banks, public and private houses are all stereotyped bastard children of foreign parentage. And there is an effort being made to coerce the shopkeepers into the same mould. No matter what their trade may be, they must manage their business as best they may behind the Renaissance shirt-front. As if true architecture were the expression of a cultured traveller, rather than a stay-at-home craftsman's endeavour to use local material fitly, to minister to individual needs and requirements.

The Town Planner.

The town-planner is a collectivist; his idea is to drill humanity into line and regulate his outward movements regardless of his inward needs. He, too, regards the general aspect and ignores individual necessities. He must have building lines and symmetry, regardless of individual tastes and requirements. He would have our tastes and requirements regulated by Act of Parliament—the deadliest machine ever invented when used to coerce taste.

The vista may be a fine model to emulate and a suitable place for strutting human peacocks and peahens, but for a strenuous practical Northern people it is not a fit and true expression of their needs to be introduced into every speculative suburb. The revival of any style or period of architecture, whether English or foreign in origin, is an evil which

*Extracts from papers read before the Architectural Association on March 25th.

tends to retard the due consideration of fitness in all its aspects.

Avoidance of Stereotyped Conventions.

If we start a plan for a house with any preconceived example of a Classic temple or a Georgian mansion, a Roman bath, or even a Gothic monastery, we shall be the less influenced by the peculiar characteristics of the site, the building owner, or the purpose of our building. And it is from the consideration of these conditions alone that all the finest architecture throughout the world has ever sprung. Moreover, consider how immensely stimulating it is to all human powers to have to evolve your building from such sources. The delight, too, of searching for moral qualities worthy to be stimulated by our building is untold, necessitating also an interest in contemporary life and feeling, so keeping our work alive and growing, and avoiding the stagnation of stereotyped conventions of ancient times. But the present method is to accept first a Renaissance conception and then ingeniously squeeze your accommodation into and behind the shell, and classify your requirements to suit your thirst for symmetry. It is like a Chinese puzzle, a *tour de force*, a clever exercise in cunning, leading to all manner of subterfuges, and as such demoralising to all concerned.

Why English Domestic Work Excels.

It is generally admitted that our English domestic architecture of recent years has advanced much more than the architecture of our public buildings and monuments. And I fearlessly assert it is because much of our domestic work has been produced by the method herein advocated, whereas our public buildings are invariably produced on the method condemned. And why? Mainly because the authorities who have to vote the money to pay for them are trying to please their electors, and they know that if they put up a hall-marked building—that is, something colourably like St. Paul's—no one will venture to criticise their choice on their taste. The word has gone round that St. Paul's is all right, and it has been repeated so often that Mr. Brown and Mr. Robinson find it a very convenient sample of good taste by which to gauge their public buildings. not one of them ever dreaming of the question—Is St. Paul's English? Is it a patriotic expression of our national character? If our modern public buildings are the outcome of foreign travel who can defend it? Surely they are the deadest, uninspiring piles of wasted labour and material that any country can show—successful as dirt-traps and dust-catchers, emphasising the grimy nature of our town atmosphere. Here, then, we surely find in the rustications of our wall surfaces clear proof that the desire to adapt foreign detail has outweighed all considerations of fitness to our dirty town atmosphere. Innumerable are the examples of similar conformity to foreign styles, preventing due consideration of practical fitness; durability and cleanliness are sacrificed to imitative convention. The true mathematical proportion and placing of the Orders is regarded as far more important than the adequate lighting or convenient placing of our chambers. We ought no more to teach the five Orders to students than to train them in Chinese. Many will say that without the five Orders no sense of proportion can be taught. I do not think that with any Orders you can teach proportion. Proportion is a matter of feeling dependent on general culture

and temperament. You may notice that every man's sense of proportion varies as much as the proportions of his body and limbs; and when he is sincere in the expression of his sense of proportion it is a reflection of his own bodily frame.

Teach Ethics, not Art.

We can very well teach the character of materials and their proper use and limitations, but the less we try to teach art the better. Teach ethics instead, and make men think, and art will take care of itself.

It would surprise many of us if we were to consider the amazing effect on modern architecture the one study of cleanliness would produce. If we are to avoid dirt-traps inside and out we must concentrate our ornament and produce breadth and simplicity, both of which qualities demand good material and good workmanship. So by omitting conventional Renaissance detail we should be driven to devote much thought and feeling to the enrichments we have, and in the plain broad surfaces we should feel the necessity of well-chosen, genuine material and a high quality of workmanship.

We can never arrive at these qualities if we are working to a definite style of the past. Use the past to supplement your experience of the use of materials, their possibilities and limitations, but do not be a slave to it. Do not depress young students by telling them they cannot possibly excel the noble men of old. Our increased experience ought to make us more able to excel anything that has gone before. The cultivation of patriotic feeling should make us devote more attention to English material, English conditions, and English character, and free us from the stigma of being called the most inartistic nation on the face of the globe.

Art, being the manifestation of human thought and feeling, must always be individual and national. Emancipation from the tyranny of styles would open the door to brother-craftsmen. We should feel the necessity for the work of the painter and sculptor in our buildings if we omitted the acres of machine-made Renaissance ornament. And brotherhood between the arts is what we need to stimulate, and it must necessarily follow the growth of patriotism in architecture.

Truthfulness, Fitness, Fidelity.

The strongest argument in favour of creating buildings from requirements and conditions, rather than in obedience to any preconceived style or mode of expression, is that it opens the way for the appeal to our higher nature, and stirs up the emotions and moral sentiments. It forces us to consider moral principles and work on definite lines of truthfulness, fitness, and fidelity. In our admiration for ancient buildings we forget that it is their manifestation of the spirit wherein they are great. The material we see is perishable and illusory. But in the spiritual significance and expression of moral sentiments they are indestructible.

Can we not emulate Shakespeare in our architecture, and by patriotic feeling express and encourage what is best in our national character?

MR. ARTHUR KEEN REPLIES.

Mr. Arthur Keen said: Let me say first how much Mr. Voysey's presence here this evening is appreciated by us. He has not hesitated before now to tell us frankly that he did not approve of our methods of education, but by coming to speak to us to-night he shows that he is moved by no

narrow or dogmatic spirit, but is anxious to help us in our study of the art for for which we share his affection. The position he takes up is a strong one, for although he perhaps will not admit it, his appeal is to our feelings rather than to our judgment; and he speaks with the seriousness of conviction because it is well known that to the extent of his opportunity he has carried into effect in his own practice the views that he holds of the possibilities and limitations of architectural art in the present day. But that he is right in his main contentions I cannot agree. If he had put them forward thirty years ago they would have been received with enthusiasm, for the spirit of the mediæval past had a strong hold on the architectural imagination at that time; but the Gothic Revival has passed. And what has it taught us? It has taught us that it had to fail because we are no longer Gothic; that the Gothic tradition ended long ago, and cannot be conjured back to infuse our work with the vitality and personal quality that belongs to the old, because our character and disposition have changed, our social conditions have altered, and our attitude towards all things has become one of doubt and enquiry in the place of submission and faith. Why should we live in a fool's paradise and imagine that things are other than they are? It never has been any use, and it never will be. We are eager and self-seeking, we have acquired education, we have travelled and seen the world; we have facilities for the interchange of ideas and commodities; our methods of life and industry, our political views, our very religion has altered—we are the products of an eager, ambitious civilisation, dominated by science, by competition, by individual liberty, and by aspirations, hopes, and ideals different from, and opposite to, those of the past.

A Broader Basis of Authority.

In many directions, however, there seems already to be a more general consensus of feeling, a broader basis of authority, a more definite conviction as to wide principles; and is not this coming about in the matter of art as in other things? Are we not already weary of each man doing that which is right in his own eyes, and is not the cry for a Ministry of Fine Arts the outcome of a desire for peace and good order, sobriety and restraint?

Convention, social restraint—call it what you will—is it possible, human nature being as it is, to get away from it for long? Man is a social animal, and is, and always has been, ruled by convention, by the general acceptance of right and proper usages. It is an inborn sense, and collectively he cannot get away from it. However much an individual here and there may kick against it, our architecture must be conventional if it is to represent us truly; and it should be of such an order that it can yield good results to a formal, academic method of expression that is able to associate itself with science and orderly civilisation, and with the commercial and social conditions that now obtain. An architecture that depended on the detached and original attitude of each individual would be intolerable. Wise restraint is almost always to be preferred to uncontrolled individualism. It the best days of architectural art and of the development of that art convention was universal—buildings, whether temples or churches, as much as ships and fortifications, were made on orthodox lines. Growth along

those lines, not departure from them, was the constant characteristic. Indeed, it is difficult to reconcile the design of a Greek temple with what one knows of the artistic aspirations of the Greeks, except on the principle of overmastering convention—a somewhat rude, ungainly type of building, impressive and dignified in its simplicity, but lacking the resource and imagination that we associate with Greek sculpture and decorative design.

Unity of Effort.

There certainly seems now to be a desire to impose a definite and generally recognised method of architectural treatment, because the struggle has gone on long enough, and we feel that in unity of effort lies our only hope of achieving in any worthy way a form of expression that can be considered national; so that by these forms and these methods shall those who follow us know that this was the work of the British nation in the twentieth century.

What is the logical outcome of the objection to sending the young man out to see the world? This, as well as the suggestion that he should work only in the material of his district, is the echo of the time when no facilities for travel or traffic existed. It would make the student into a kind of ancestral beaver, secure in his lodge, protected by his dam, snug and self-satisfied, without incentive or imagination or horizon. Are we not to take the world as it is, and are we to try and force our part of it back into a position it has left long since? I agree with Mr. Voysey that the revivals that he deprecates are lamentable enough, although in a measure they express faithfully the national attitude towards things; but I submit that the course we have had our attention directed to by him involves a greater revival than any we have had before a revival of former social conditions rather than one of mere architectural forms, and I think that to be successful it involves the architect in becoming a mason, or a sculptor or a carpenter again; for, if I understand aright the qualities that Mr. Voysey desires, they are to be obtained in no other way. We have had cases enough, and to weariness, of endeavours after texture and local character, and the appearance of "craftsman" art, obtained by laborious detailing and by close supervision of the workman, and I say, without hesitation, that such efforts are wrong artistically.

We are not Mediæval.

We have to produce our architecture at the drawing-board and by means of specifications and letters and bills of quantities; for Heaven's sake let us be honest and admit it, and not try to pretend that we are treading in the steps of our ancient brethren when we are beset about with contracts and by-laws, with county council applications, with party walls, and with all the appliances and products of science and commerce. I was shown recently on a lantern screen two pieces of brickwork—one a genuine piece of fifteenth century work with all the charm of irregularity and texture upon it and in it; the other was confidently put forward by the lecturer as the best bit of modern brickwork he had ever seen; it aped the characteristics of the old work in its irregularity, but to me it was a slovenly, untidy, rough bit of work that would have been a disgrace to the bricklayer if one had not known that the poor man, no longer free to work in the accepted way, had been made to do it, by the architect, as a deliberate piece of affectation. We are not mediæval bricklayers or masons; why

should we pretend that we are? I do not think that Mr. Voysey wishes us to do so, but I do submit that what he suggests to us really involves us in something of this kind, for he claims that architectural character is to grow again out of the nature of the material, and its right uses in order to meet the needs of the time and express the ideals of the individual; as I understand it, this is the mediæval attitude, and involves the mediæval method.

Was Our Work Ever National?

We are to make our work national again; but when was it ever national in the sense of excluding foreign influence? It has been in a constant state of change since the beginning of our civilisation, and I think it would not be difficult to show that most of the change has been due to foreign sources.

The Saxons came from over the sea; our Norman architecture was an importation; Westminster Abbey itself is on a French model. Mr. Lethaby has been making startling suggestions lately as to architectural beginnings, and the transfer of features and of methods of construction from one part of the world to another. And why should not this transference take place? Does the delightful little bridge at Prior Park fit less well into the English landscape because it is in a sense an exotic? Are not the bridges at Cambridge or Bath homely and natural, although they may be based on foreign models? It not Stamford a characteristic English town, although it is full of Palladian work? In every age and place the art of the native craftsman has been tinged and suffused with the foreign influence. Here in England it has proceeded side by side with that of the professional architect for many generations, "stealing and giving" charm.

The "sincere expression of national character and aspirations"—what is it? What does it mean in these days? And what does "Patriotism in Architecture" really mean? Does it really mean anything except that we are to use everything that comes to us in a reasonable way to suit our own particular needs?

Axial Treatment.

We need be under no misapprehension that a style of architecture that does not faithfully serve the national need will endure. Mr. Voysey is severe on our town halls and banks and railway stations, but to the extent that their architecture does not meet its requirements it already stands condemned. Is he not unduly severe with these buildings? He seems to deprecate symmetry in design, but surely a town hall is essentially a building that calls for such design; its plan must be simple and regular; the requirements of it suggest and impose uniformity and repetition. The axial treatment is the right one. And is not symmetry in the design of domestic buildings a great factor of beauty? Are such houses as Montacute and the great Jacobean mansions or the house in West Street, Chichester, the worse for it? I submit that house planning was never more sound and serviceable than today; but when have we had more striving after regularity and balance than at the present time?

The Law of Fitness.

Mr. Voysey says that a national style can only grow up by a recognition of our conditions, material and intellectual; that we must obey the Divine law of fitness. Nothing can be more true or better expressed; but this does not cut

us off from foreign influence; on the contrary, it leads us to it, for we are cosmopolitan in these days—not hide-bound, prejudiced islanders. No doubt an architect may be wrong if he makes his railway station resemble the Roman bath he has seen in his travels; but this is no argument against travel. He would be equally reprehensible if he made it resemble Durham Cathedral; but on the other hand, a fine sound conception like the front of King's Cross Station may be the direct outcome of something seen in Spain or Constantinople.

I think it is a fair claim that most architectural students are, as a matter of fact, being taught to recognise all material and intellectual conditions, and to observe particularly the supreme law of fitness. But it is on this point that the issue really depends, for the schools advocate the use of certain well-known architectural forms and features in design that is to comply with these principles, and Mr. Voysey claims that these forms and features are not admissible; that they have no connection with reasonable design, and that in fact they are used for their own sake. I think he is right here to a very great extent, and that features are commonly used in a wrong and gratuitous way; but surely features of some sort are admissible, and why should not suitable ones be adopted from old work, either native or foreign?

I fully agree that we must master, as far as we can, as Mr. Voysey says, the unalterable technical qualities, the uses and character of materials, and the essential truths relating to their handling; but, as we have been told before now, this leads as only to "pleasant building"; it is but a small part of architecture. Indeed, is it architecture at all? Is not architecture something added to building, something expressed through building, but in no way essential to it?

Past and Present.

We have been told that our present methods of education are steadily leading to an artificial mode of expression, independent of the practical necessities of life. Now, I doubt this very much. I believe our education is endeavouring to keep step with other education, and to equip the student to meet what must be regarded as the practical necessities of modern life. I do not want to be misunderstood or to put myself in a false position. I admire and love the old things; I would rather go out of my way than let an old bridge or a Whitgift Hospital be pulled down; I would look through wavy old glass rather than have it replaced by plate; but the methods and the ways of life that produced them belong to the time that is gone for ever, and can no more be called back than the Psalms of David can be written again.

I think Mr. Voysey is quite sound when comparing the past with the present. It is too true that, while we have gained knowledge, we have lost insight; we have got experience, but lost imagination; good taste is no longer spontaneous; the unerring instinct and judgment of the craftsman are gone, and we can no more work with the methods of the past than we can regain the blind unreasoning faith of our Calvinistic forefathers.

There are all sorts of questions about durability and cleanliness and colour on which I should have liked to join issue with Mr. Voysey if there had been time; let me merely interject here that in places where smoke and soot predominate, the rougher and not the smoother a building is the better; for even soot will reflect light if it is in irregular lumps, but not

when it is a smooth greasy skin over a polished marble or smooth ashlar surface.

Sound and Scholarly Design.

It is to the main characteristics of sound and scholarly design that we must look in these days, not to the touch of the craftsman. To breadth and proportion, to light and shade, to balance and composition and contrast, to sound and obvious construction, to fitness, to beauty of detail, to cheerfulness and light. We are not German, or Italian, or American, or French, and everything will be done in our own English way; if we are all soundly taught, and taught on similar lines, our architecture will be worthy and dignified, free from vulgarity or untruth, and we need not fear that it will not be national. But to begin the whole thing anew and invent our architecture again or evolve it anew out of methods of building, while turning our backs on what the past has to offer, merely because it may not be of English origin, seems to me to be to invite disaster and chaos;

just as wrong as to destroy all our pictures and to learn painting again.

Mr. Voysey's High Ideals.

But let me conclude as I began, by expressing appreciation of the service Mr. Voysey has rendered to us by what he has been saying. He has initiated the discussion of a matter of great interest. He has condemned all that is mean or vulgar, sordid or dishonest; he has held up to us an ideal of the highest kind—an ideal that I believe myself to be incapable of realisation by reason of the conditions that now control us, but an ideal that he has put forward with sincerity and conviction; an ideal that we may always keep before us to correct our judgment, to form our character, and improve our aims. If we do not perhaps see eye to eye with him in the method of its attainment, we all share his hope that the architecture of our future shall be noble, pure, and inspired, worthy of its past, and in the highest sense national and expressive of national aspirations.

DISCUSSION.

Mr. Harrison Townsend, seconding the vote of thanks, asked whether Mr. Voysey's paper would not have been improved by a definition of patriotism. The dictionary sense was: "One whose ruling passion is the love of his country"; but a patriot, although a lover of his country, was not necessarily the neglecter of another country. Johnson, in one of his essays, said: "That man is little to be envied who would not gain force upon the Plain of Marathon." There was a wider patriotism which did not exclude other countries, but hoped to gain by their teachings. If architecture was to be confined to a country, why not make it parochial and limit it to districts? Mr. Voysey, he continued, could not have put a worse witness in the box than Shakespeare. Shakespeare wrote thirty-nine plays, not one of which dealt with an English subject. He went to Italy, Greece, and Rome, and transmuted their thought into English thought; and in the same way an architect would not be less an Englishman, but rather more an Englishman, by having a wider and more fully charged mind.

Mr. Arthur T. Bolton said it would be well to remember what an enormous influence Mr. Voysey's work had had upon other people. Much as he admired his (Mr. Voysey's) buildings, however, he could not accept his gospel. That men were doing work in the Middle Ages without caring for what had gone before, as Mr. Voysey seemed to believe, was, he thought, historically untrue. He seriously believed that those who had travelled most found out the local attitude in a country; and when they returned they were better able to discover what the local character was at home. With regard to climate, Mr. Bolton took France as an example, where the range was enormous; and in different parts of England climate was subject to immense variations. It was impossible to classify the climate of a country, as Mr. Voysey would do, for this reason. When, he continued, one honestly tried to design a building which merely met the needs of the case, people would say it was dull, and that they wanted something more. The arcades, for instance, in Romanesque and mediæval cathedrals did not arise out of the construction, but were put there simply because people liked them. It was the same with the Orders; if they were liked, there was some human necessity for them. St. Paul's Cathedral, it should be remembered, derived its plan from Ely. Wren was a remarkable man who had a knowledge of Gothic for which he was not generally credited; and he thought that in St. Paul's they had a clever interpretation of English ideals with Renaissance details. There was nothing like St. Paul's; which, in its way, was a very English design. With regard to the Orders, the reason they were retained was because they taught the student a great deal about proportion. By studying them, the student gained the sense of designing detail in accordance with a certain standard. As to teaching ethics in relation to architecture, where Ruskin had failed he did not think we should do much good.

Mr. Allan Potter said he had a great deal of sympathy with Mr. Voysey in his objection to foreign travel when it only resulted in the production here of some contemporary foreign style. With respect to the Orders, surely they should be taught as Latin and Greek were taught in schools. Latin was not taught so that a student should write dog Latin,



EGYPT AND GREECE. DRAWN BY A. C. CONRADE

but that he should be able to write good English. We did not want merely to copy the buildings of the past. Because Westminster Abbey and St. Paul's were suitable to the periods at which they were built, they were not necessarily suited to the needs of the day.

Mr. H. W. Brittan suggested that it was really the spirit of the times to which Mr. Voysey objected.

Mr. A. E. Bullock said that Mr. Voysey objected to the Classic style and sash-windows because we had abandoned our old love. Nevertheless, we had gained thereby our Georgian style—a style as lasting as any other.

Mr. C. G. Boutcher and Mr. Alex. Smithers having spoken, Mr. Gerald Horsley, in putting the vote of thanks, said that Mr. Voysey, in the expression of his strong individuality, had quite overridden the facts of history. What they had learnt from Mr. Voysey was the very high ideal he had put before them.

Mr. Voysey, in reply, said he was surprised at the amount of courtesy he had received. They had been shooting all round him, but he felt not the least bit killed. The point he had wanted to make was that we should get our architecture from within, and not apply it from without. We did not want an imported style. The Gothic Revival, of course, was not a revival of spirit, but a revival of form. He agreed that things changed, but the moral sentiments never changed. It was out of those moral sentiments—love and truth—that the finest things had come or would come. He had introduced Shakespeare because he wrote of the salient points in our national character.

IN PARLIAMENT.

(By our Press Gallery Representative.)

The University of London.

In the House of Commons, Sir Philip Magnus, the member for London University, asked whether the Government had appointed a trustee or trustees in connection with the proposal for providing a site in Bloomsbury for the headquarters of the University of London, and whether the Senate of the University had been informed of the proposal and had expressed any opinion thereon.

Mr. Asquith, in reply, said: The Government have not appointed a trustee or trustees for the purposes described. A body of trustees is, however, being constituted, one of whom is a member of the Government, to receive gifts offered in connection with the recommendations of the fourth report of the Royal Commission on University Education in London. A generous gift has been made on condition that a particular site is acquired. The question of its suitability is one affecting the future organisation of the University, a matter on which the Senate has found itself unable to offer any evidence to the Royal Commission.

Sir Philip Magnus asked if he might take it that the Senate had not been consulted.

Mr. Asquith replied that the hon. gentleman must draw his own conclusions.

Sub-letting of Government Contracts.

Mr. Tyson Wilson asked Mr. Benn, as representing the First Commissioner of Works, whether the present policy of the Office of Works was not to permit any sub-letting of contracts or parts of contracts, unless good and sufficient reason

was shown; whether when tenders were being considered it was considered to be a point in favour of a firm if it was in a position to execute the whole of the work itself, or whether the question of sub-letting was not raised at the time; and whether the department would in the future restrict sub-letting as much as possible.

Mr. W. Benn, in reply, said: No sub-letting is allowed without the consent in writing of the Department, and that consent is only given when the Department is satisfied that the sub-letting is in accordance with the custom of the trade. In inviting tenders for building work, the Department informs tenderers that sub-letting is only allowed where unavoidable, and asks them to state on their tender which trades, if any, they would find it necessary to seek permission to sub-let. The Department will, as heretofore, restrict sub-letting as far as possible.

School of Architecture.

In the report of the Board of Education for the year 1910-11 it is stated that in the School of Architecture connected with the Royal College of Art there were during the first term twelve students in the Upper Division and fifty-eight in the Lower Division. The Lower Division students followed the introductory course of measured studies of historic examples from the Museum and other sources, followed by a series of subjects in design. The advanced students afforded assistance in superintending the work of the several groups into which the large class of 58 was subdivided, thus gaining experience in tuition work. The Upper Division students during the first term dealt with subjects in groups and individually. Five advanced students prepared designs for the façade of a royal palace in the modern Renaissance manner. During the second term all the students undertook the same subject. Preparatory studies were made in the Department of Drawings, and of examples of Italian colour decoration in the Museum, followed by a fully worked out design for a small domed church decorated in colour. Eighteen students of the Lower Division continued their studies for a second term.

School of Decorative Painting.

In the School of Decorative Painting there were during the first term 22 students in the Upper Division and 17 in the Lower Division. In the second term there were 24 in the Upper Division and 26 in the Lower Division. The great interest of the year has been the opportunity of actually working *in situ*. The Upper Division has been principally engaged in designing, preparing, and carrying out wall and ceiling panels in the lower corridor. The impetus and interest afforded to the students by actually working for a definite site has materially benefited and improved the work. The subjects for the monthly competitions in connection with Mr. B. A. Spencer's lectures have been incidents in the history of London.

The King Edward Memorial.

In the House of Commons, on March 27th, during the debate on the second reading of the Consolidated Fund Bill, Captain Murray introduced the subject of the proposed King Edward Memorial in Green Park. He defended the right of the House of Commons to discuss the question of placing statues in royal parks. He held that in a large city like

London every tree, every leaf, and every blade of grass was worth untold gold. People did not sit in the parks to feast their eyes on statues and memorials. While admitting that the Green Park site was better than the one originally selected by the Memorial Committee, he thought there were few who would say that it was a good site. He hesitated to express an opinion about the memorial itself. He did not think it was artistic, and he did not think it was sufficiently well chosen for the particular site. He had hoped that there would have been a simple equestrian statue. If Mr. Wedgwood Benn, representing the First Commissioner of Works, could assure him that the Shadwell Park scheme could not be proceeded with unless the Green Park site was finally selected, and if, further, he would take into account the considerable feeling that existed against placing memorials and statues in the parks, and if he would be further prepared to give an undertaking to the effect that in future no more statues or memorials should be placed in the royal parks, then he (Captain Murray) would use any little influence he had to restrain any further opposition to the Green Park site, and would do everything to ensure the two schemes going through as soon as possible.

Mr. Whitehouse thought it would be unfortunate if they indefinitely extended this principle of putting large memorials involving a great amount of building in the public parks. He maintained that the Office of Works must not be free from the restraints imposed upon it by the canons of art. He had carefully studied the miniature model of the proposed King Edward Memorial with profound disappointment. He had nothing to say regarding the eminent sculptor and the eminent architect who had been associated in this matter, but he thought it would have been of very great advantage to the artistic merits of the memorial if the Office of Works had thrown open the design for competition. He thought it would have been desirable to have exhibited the alternative design of the sculptor who was responsible for the accepted design, a design which showed an open colonnade which would give from Piccadilly a long view of the grass and trees behind. He suggested that the height of the memorial was a very serious drawback to its merits. It was fair to state that the height could only be justified on the assumption that the memorial was to be studied from a great distance, but people who desired to see the statue were likely to be near it. He pleaded for the most careful guardianship not only of open spaces as open spaces but of their artistic amenities. He hoped for an undertaking that the public parks would not be regarded as the dumping ground for memorials.

Mr. Noel Buxton also spoke against the encroachment upon public parks. He hoped it was not too late to withdraw the proposal for the Green Park Memorial, and bring forward another for a much greater memorial at Hyde Park Corner.

Mr. Ormsby-Gore, though agreeing with the view that the Green Park was a most undesirable place for a large architectural and sculptured monument, said that when a committee had chosen an architect and a sculptor, it was of no use that House crabbing the design. They might quarrel about old masters as much as they liked. They did not suffer. But that was not the place for criticism of living artists, and of the work they had executed. He thought there were a great many merits in the design. The

chief fault was the place in which it was to be put. The setting would not give it a fair chance, but the actual model seemed to him to have some very striking merits. At any rate it was simple. It was not overburdened with sculpture, and the main lines of the architecture were not weak. It was a good strong architectural elevation, with columns. The criticism that the St. George and the Dragon emblem would not be seen was an absolutely unfounded criticism, and he thought that that small group was by far the best sculpture in the whole design. It followed one of the finest designs that had ever been made, and that was the design we had on our coin. One suggestion he had to offer was that the architectural part of the design should not be executed in white marble. Anything more unsatisfactory than the appearance of the Marble Arch it would be difficult to find. White marble was effective, but in process of years it was affected by the atmosphere and the acids of London, and they might scrub it with spirits of salt and other things, but they seemed to drive a sort of smokiness into the surface of the stone. He suggested Portland stone. To put white marble in the Green Park, against the background of the Naval and Military Club, would cause considerable ugliness, and would not add to the merits of the project. They did not want an imitation of the Thiergarten at Berlin.

Mr. Wm. Pearce thought that if there was further delay it might interfere with the success of the other part of the King Edward Memorial scheme—namely, the provision of Shadwell Park for the residents of the East End.

Mr. Wedgwood Benn, replying on behalf of the First Commissioner of Works, said he was not called upon to defend the artistic merits of the memorial, although, were it necessary, he was thankful to think he had such an ally as Mr. Ormsby-Gore. The House had to consider whether they would permit the First Commissioner of Works to grant permission for the memorial to be placed in Green Park. He did not think the plan would bear out the contention that there was any real encroachment on the rural amenities of the Green Park. As to the Shadwell Park scheme, he would say that the two parts of the memorial scheme were independent. With regard to the material for the architectural part of the memorial he stated that it was not intended to use marble, but Portland stone. The memorial would be 43 ft. high, 21 ft. broad, and 16 ft. deep. The statue of the late King would be 8 ft. 10 in. in height. By putting in the masonry they got over the very great difficulty of having the statue facing the Queen Victoria Memorial, and turning its back to Piccadilly, or *vice versa*. The site for the memorial would be given by the First Commissioner of Works, and consequently would cost the Memorial Committee nothing at all. At present £112,000 was available for the Committee, and Sir Vezey Strong and the other members hoped to raise that to £130,000. It was proposed to spend on the memorial in the West End £20,000, and £110,000 on the Shadwell Park scheme. The Committee proposed to buy the Shadwell Fish Market and convert it into a park. The area was about eight acres, and the cost was estimated at £110,000. They proposed to reclaim three-quarters of an acre of the foreshore for the park. It was to save money for this purpose that it had been necessary to reject the other schemes which had been submitted before the Green Park scheme was adopted. He thought the Committee had succeeded in

putting forward a plan for erecting a worthy memorial in a suitable place near the Victoria Memorial, but not in competition with it, and they had attained another object with which the late King would have warmly sympathised. They had secured a park which would be for ever a source of well-being and delight to thousands of his poorest subjects.

Lord Balcarras said it was obvious from the plan in the Tea Room that the design finally accepted was a compromise brought about either by pressure of public opinion or the criticism of the Committee. He afterwards deplored the encroachments made upon public parks for the purpose of erecting statues.

The subject then dropped.

CASEMENTS.

An excellent catalogue dealing with casements and steel sashes has recently been issued by Messrs. George Wragge, Ltd., Wardry Metal Works, Salford, Manchester (London office: 209, Shaftesbury Avenue, W.C.). Like other catalogues now issued by leading firms for the building trade, this is admirably produced, being illustrated by sections of the numerous varieties of casements and sashes obtainable, and by photographic views of buildings in which these have been fitted. The sections are specially useful, for they show exactly, and to a large scale, how the parts come together. Sections through the head and sill are given, as well as plans of the jambs, and in this way all the essential particulars are presented, so that there is complete material for making a choice. Messrs. Wragge have had many years of experience in the making of casements and steel

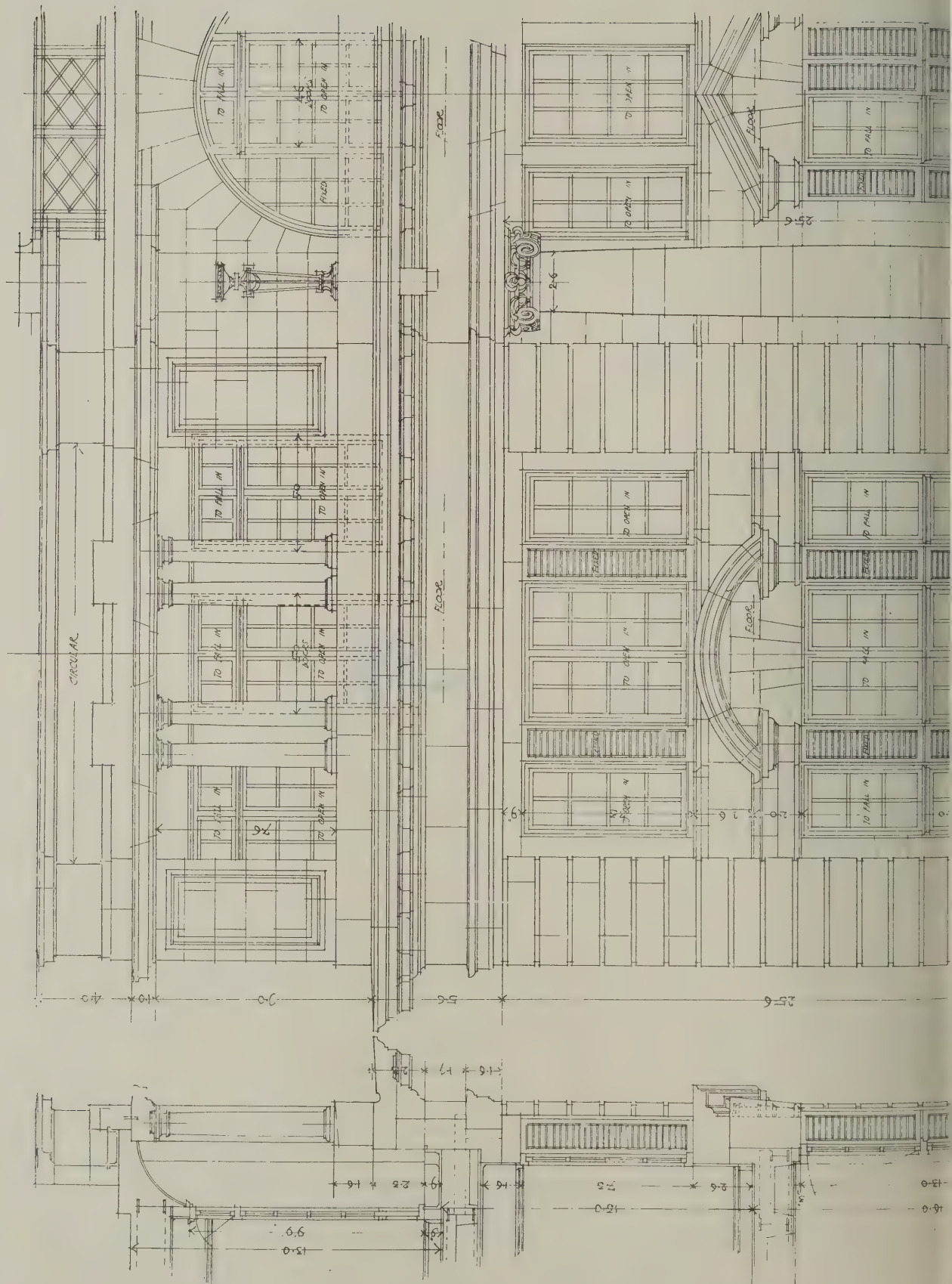
sashes, and, as a result, they have determined certain sections which, after test in the firm's workshops and in actual use, are proved to be thoroughly efficient and satisfactory. With a casement, of course, efficiency means weather-tightness, but there are also the additional requirements of ease of opening and fixing, as well as means for holding the casement at any point. Suitable fasteners and stays have been devised for this purpose, and in the catalogue before us we see a large number of good patterns. The modern casement is free from the defects which were formerly too noticeable, and its use is to be recommended both for private and public buildings, where abundance of light and neatness of effect are desired.

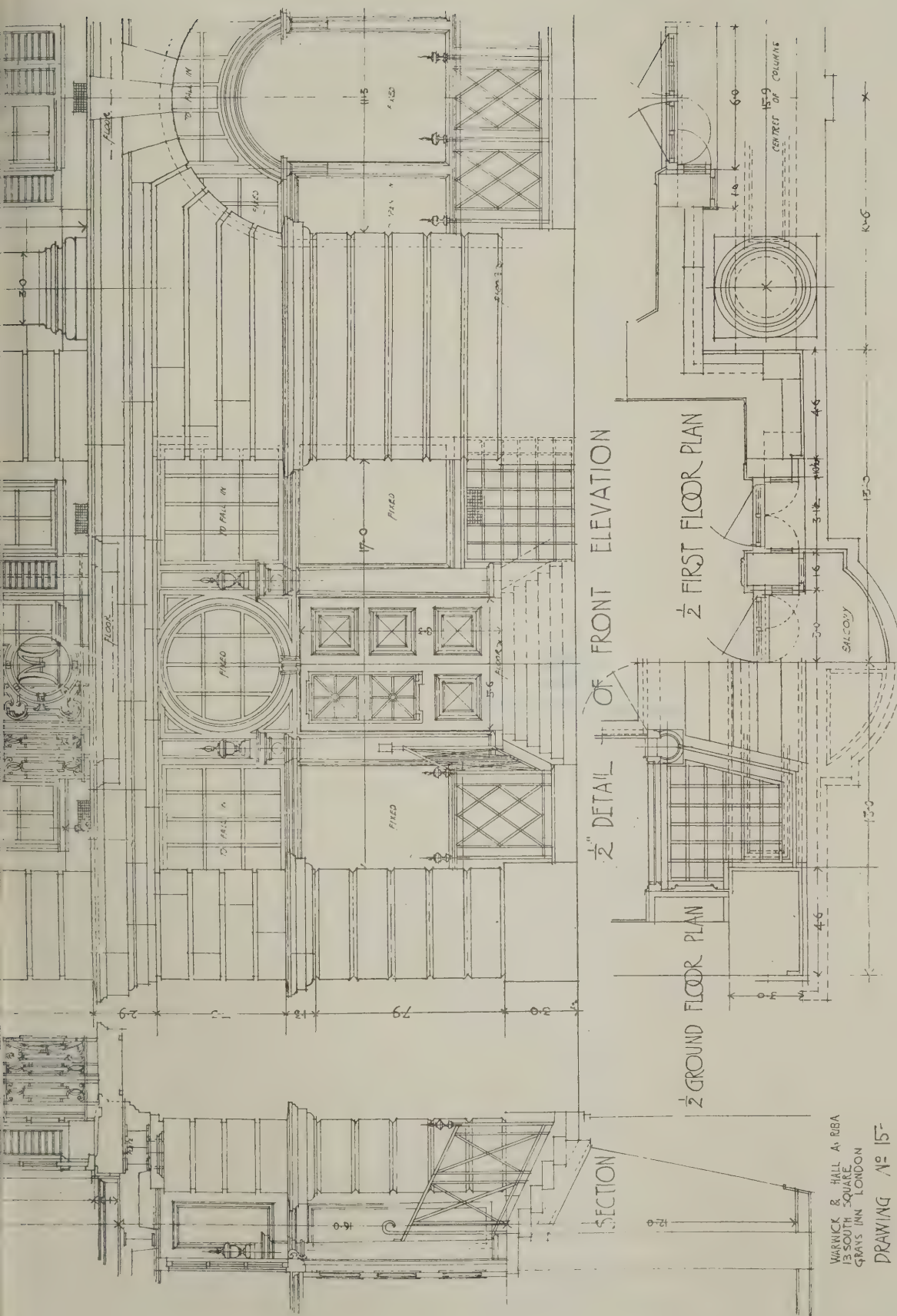
Houses by Mr. Edgar Wood and Mr. Walter Cave, among others illustrated in Messrs. Wragge's catalogue, serve as good examples of the employment of modern casements, while buildings like the Mersey Docks and Harbour Board Offices at Liverpool; the new G.P.O., London; the Royal Infirmary, Manchester; and the Glasgow Parcel Post Office are among some in which Messrs. Wragge's sashes have been employed; these, and others, are ample evidence that the modern steel sash window is excellently adapted to modern needs, while at the same time affording considerable scope for architectural treatment.

Messrs. Wragge guarantee weather-tightness, provided that the rebates are approved by taem, and that the fixing and glazing have been satisfactorily carried out. An example of a window fitted with their casements is shown on this page. Its merits are self-declared.



A MODERN WINDOW WITH CASEMENTS BY GEORGE WRAGGE, LTD.





ST GEORGE'S HOUSE, PERTH, WESTERN AUSTRALIA: DETAIL OF FRONT ELEVATION.

WARWICK AND HALL, ARCHT.

NOTES ON THE L.C.C. DRAFT REGULATIONS FOR REIN- FORCED CONCRETE,

BY PERCY J. WALDRAM, F.S.I., LIC.R.I.B.A.

The following notes are those to which attention is drawn in an editorial note on an earlier page :

Compulsory Calculation by the Straight-line Theory.

Instead of stating that the permissible stresses are calculated by the straight-line theory, it is stipulated in Clause A that reinforced concrete *shall* be calculated on that theory—namely, on the assumption that cross-sections of a member which are plane when that member is straight remain plane after it deflects under load. In other words, that the stress-strain curve of reinforced concrete is a straight line. Although this assumption is a very convenient one, and although it is probably very nearly true of concrete reinforced with efficient shear members, it is *not* true of plain concrete in compression. It would appear to account for a marked difference between theoretical and actual deflections, and it may possibly serve to modify theoretical assumptions in the near future.

Any such modification may or may not have material results upon practical construction, but the fact of its being even remotely possible is a most cogent reason why the Local Government Board should insist upon the regulations being subject to automatic periodical revision by the Council and the four Institutions concerned, say, every two or three years. Such revision could do no harm, and, what is more important, it would secure to the public the results of further research. There is little inducement for any busy practical man to endeavour to evolve new and better theory or practice when he knows that if his results do not exactly square with the regulations they will stand very small chance of being even listened to.

Scope of the Regulations.

According to Clause 23 of the 1909 Act, the regulations were intended to refer to buildings "wholly or partly of reinforced concrete." It is by no means clear which, *if any*, of the clauses refer to reinforced concrete used in any position in a building, and whether all must be complied with in order to justify the relaxations of the Building Act in favour of thinner walls scheduled in Part V. No hardship would be involved by making at least the majority of the clauses applicable to all reinforced work, and authority to do so appears to exist in the wording of the parent Act. If they are necessary for special buildings they are desirable for all.

Wind-Pressures.

It is noticeable that Clauses 18a and 18b specify wind-pressures which are more in accordance with known facts than those specified in the parent Act. This has been objected to on the ground of want of uniformity; but it shows a healthy desire to conform with the advance of knowledge even at the expense of consistency, and should be retained. At the same time it affords a striking example of the difficulties likely to be involved by attempting to give theory a legal status without providing automatic machinery for its revision. We have been studying wind-pressure for 100 years. For some fifty years past we

have accepted the view that a pressure of 56 lb. per foot super. was a proper and reasonable measure of its effect. Only three years ago an Act was passed recognising that 30 lb. over large surfaces was all that could be insisted upon, but already this has had to be reduced *under the same Act* to 20 lb. Is our present theory of an almost new subject likely to be any more infallible?

It is obviously impossible to attempt to review the whole of the 160 clauses in detail; but a few brief examples may be given of points which would certainly appear to need further consideration.

Depth of Beams.

Clause 23 limits the depth of beams to $\frac{1}{24}$ of the span, but removes that restriction on beams whose *calculated* deflection is less than $\frac{1}{800}$ of the span. It does not state what load this deflection is to be calculated for, neither does it state the method of calculation nor whether allowance is to be made for the concrete in tension, which seriously affects the actual deflection. It further ignores the fact that a deflection of $\frac{1}{800}$ is a most serious deformation, indicating stresses of about 700 to 900 lb. on the concrete even on beams $\frac{1}{24}$ of the span in depth, and, of course, more on beams of greater relative depth. Later on, in Part IX. (Testing), the same deflection is made the criterion of strength. If ever it becomes customary to test beams as at present constructed until deflections of much more than $\frac{1}{800}$ are registered, it is to be hoped that district surveyors will be content to view such tests at a safe distance.

The restriction of depth by means of a calculated deflection of $\frac{1}{800}$ will not even effect its object, because the calculated deflection on *all* beams over $\frac{1}{24}$ of the span in depth and stressed up to 600 lb. on the concrete would necessarily be less than $\frac{1}{800}$ even if the effect of concrete in tension be neglected.

Bending Moments.

The stipulated bending moments on supported slabs (Clauses 28 to 29a) are apparently those derived from the theoretical deductions of Rankine and Grashof, who can hardly be considered as authorities on reinforced concrete. The latest American code of regulations (see "Architects' and Builders' Journal," February 28th, page 234) require such slabs to be calculated for bending moments 300 per cent. to 400 per cent. greater.

Working Load.

The use of steel stressed up to 20,000 lb. per square inch working load (namely, nearly 30,000 lb. test load), Clauses 135 and 136, for slabs without compulsory shear members, is certainly open to question. Under such stresses the concrete in tension is certain to crack, and thus offer a direct invitation to failure by the most common cause of all—namely, diagonal shear tension.

This is all the more important in that the latter is not recognised at all, and the limit of stress in concrete in pure shear (60 lb. per square inch) would be accompanied by diagonal tensions which could hardly have a factor of safety of A. The New York Regulations limit the permissible stress to 16,000.

Wanted—A Few Definitions.

The Regulations would be decidedly improved by a few definitions, especially as in many instances one finds what is apparently the same thing referred to in different ways.

Thus, in Clauses 42 and 50 the terms "ends bent into the form of a hook," and "ends bent to a J form," may or may

not mean the same thing. But neither is defined, although the minimum inner diameter of hooked ends is by no means an unimportant matter. The same clause leaves the reader in complete doubt as to whether the length of bar necessary to form the hook is part of the stipulated grip length or not.

Again, in the space of only 5 clauses (Nos. 86, 87, 99, 101, and 102), determining the permissible load on columns, we find no fewer than ten expressions—stress, full stress, working stress, stress on the concrete in the area bounded by lateral reinforcement, working compression stress on the concrete of the hooped core; load, safe load, and working load, maximum permissible pressure, and total permissible pressure. The ordinary designer would prefer a little frank tautology.

Strengths of Columns.

Clause 87 states the relative strengths of various columns as follows:—

Both ends fixed	1
One end fixed and one end hinged	$\frac{1}{2}$
Both ends hinged	$\frac{1}{4}$
One end fixed and one free end	$\frac{1}{8}$

These are the crippling factors in Euler's formula, which is true only for columns so slender that their strength varies inversely as the *square* of their length. For all ordinary columns the respective ratios of strength would be approximately 1, $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$; and in all columns the relative strengths would be those of columns whose relative lengths were approximately as 1, $1\frac{1}{2}$, 2, and 4. It would appear that this clause might be re-drafted with advantage.

It is, of course, quite possible that these points may have been already raised by the four Institutes, who, under the 1909 Act, have to be notified of the Council's intention to apply for the L.C.B. sanction. If so, it would be very desirable for the final draft to be published before it is formally sanctioned, in order to allow the professional public and the technical press an opportunity of offering suggestions.

THE BUILDING TRADE IN NEW SOUTH WALES.

We are in receipt of copies of the annual report of the Master Builders' Association of New South Wales for the year ending January 23rd, 1912, from which it should be possible to glean facts and inferences that may afford a means of useful comparison with present conditions in our own country.

The opening sentence is jubilant: "The year now closing has been one of record progress in the building trade of the State of New South Wales." It is further recorded that, as far as the City of Sydney is concerned, the process of adding further storeys to existing buildings has almost entirely ceased, the work carried out having mainly consisted of filling up the few vacant spaces and pulling down and entirely rebuilding on modern up-to-date lines. The increasing value of land has caused owners to erect much higher buildings than were customary a few years ago. One building, the contract for which has been let during the latter part of this year, will reach when completed a height of 165 ft. above the footpath, or 192 ft. from basement floor to roof, and will contain fourteen storeys, constituting a record for high buildings in Sydney. The City Council has continued its policy of erecting new markets and demolishing some of the

old slum areas for the purpose of widening existing streets or forming new ones. This policy has no doubt been an important factor in the increased demand for buildings of a small residential character which have been erected by speculators, thus assisting to accentuate the shortage of labour. The general prosperity of the country shows no sign of declining, and its effect is of course felt by the building trades; and there seems to be no diminution—in fact, there has been apparently an increase—in the number of buildings erected for the purposes of amusement, such as picture shows, theatres, skating rinks, etc. The capital cost of the buildings actually completed in Sydney during 1911 is returned by the Board of Water Supply and Sewage at £3,825,182, as compared with £2,569,529 for 1910. Bricks cannot be turned out fast enough to meet the demand. All the yards are producing all the bricks they possibly can with their present plant and labour, and they are selling every brick they make. In fact, builders are compelled to wait for supplies for at least six weeks from the time of ordering.

If only there were an adequate supply of labour and materials, the prospects of the near future for the building trade would be in every respect brighter than they have ever been in the history of the State. There is a large amount of work waiting to be started, the difficulties of obtaining sufficient men and material having caused the architects in many instances to wait a little longer before building. The demand for residential houses and cottages is greater at the present moment than it has ever been before in Sydney and the suburbs.

The shortage of labour has become more marked than it was during the preceding year. Of course it was not confined to the building industry; and a Royal Commission of Enquiry was appointed; and representatives of the Association gave evidence of their actual need of 587 men of different trades. The various trade unions had contended that the "alleged" shortage was imaginary; but the stonemasons admitted a shortage, although they contended that it was only temporary; while the bricklayers' society preferred not to give evidence. In the

experience of the Association, the shortage in the early part of the year was felt most keenly in regard to masons, and during the latter part of the year there was more need of plasterers and bricklayers. The only results of the enquiry, so far as Government action is concerned, are "a few well-considered platitudes from the Premier." Immigration, assisted by the Government with reduced passages, is thought to be the only remedy.

The Labour Government has started carrying out works by the day-labour system. The present Minister of Works has gone a great deal further even than the preceding Minister, the late Mr. O'Sullivan, in this policy, and has started State brickworks, a State blue metal quarry, a State timber yard, and a State lime-kiln, and proposes also to start a State cement works. In carrying out the day-labour policy, the Government thought fit to retire Colonel W. L. Vernon, who had been Government Architect for more than twenty years, and had earned the respect and admiration of everyone who had had any business relations with him. On his retirement he received presentations from different bodies, and the Association "could not let such an event take place without showing their appreciation of his many years' services to the State, and his great ability and fair dealing."

During the year under notice, the relations between the Institute of Architects and the Association have continued upon an excellent footing. The demand for the Association's Conditions of Contract has still further increased, and no disputes between architects and members have been brought before the committee. The Institute, however, has put forward revised conditions of contract proposed in substitution for those now in use.

For some cause not exactly known, the Government appointed a Royal Commission to enquire into the practices that existed in relation to prime cost items in Government contracts, and in spite of the strongest evidence that the practice of builders receiving trade discounts from merchants in connection with these items was universal and world-wide, and should be openly recognised, the Commission stigmatised these discounts as "illegal commissions." The Association has taken the matter into consideration, and has decided that the new Committee shall take early steps to confer with the Institute of Architects with a view to obtaining an amendment of the P. C. Sums Agreement, if possible on similar lines to that arrived at recently by the Melbourne Association with the Victorian Institute of Architects. This agreement, arrived at after some years of very serious trouble, appears to be a very satisfactory one, and an improvement on the agreement entered into some years ago in this State.

Industrial disputes during the year included a demand by the slaters for an increase of 1s. per day, which they got after a strike, the master slaters weakening owing to a lack of unanimity among themselves; a settlement with the carpenters, whose demand was for an increase of wages to 1s. 9d. per hour; an award to the quarrymen of an increase of wages and a reduction of hours to forty-four per week on the ground of the unhealthy character of the occupation; a slight increase of wages to the painters and decorators; and a variation of the award to sawmill and timber-yard employees. The continual variation of awards, and the frequent alteration of the laws regulating labour, cause considerable vexa-



LEAD-COVERED BAY TO BUSINESS PREMISES IN LEICESTER. EVERARD, SON & PICK, ARCHITECTS.

tion and harassment to employers, and constant ferment among employees.

The Workmen's Compensation Act, which came into operation on January 1st, 1911, while it has imposed on the employers a considerable increase in the cost of insurance, does not appear to be at all satisfactory to the employees; and already an amendment of the Act has been brought forward, but, owing to Cabinet changes, has been shelved.

The apprenticeship question is being dealt with by the Royal Commission on the shortage of labour, and its report is awaited with interest.

The report is signed by Mr. A. E. Boroughs, president, and Mr. N. Phelps-Richards, secretary.

INSTITUTE OF BUILDERS.

The twenty-eighth annual general meeting of the Institute of Builders was held at the offices, Koh-i-Noor House, Kingsway, W.C., on March 20th.

The minutes of the last annual general meeting were read and confirmed, and the audited accounts of the Institute and of the Institute Benevolent Fund were submitted by the treasurer (Mr. J. Carmichael, J.P.), and were adopted.

The following officers were elected for the ensuing year: 1. President, Mr. H. Arthur Bartlett (Messrs. Perry and Co. (Bow), Ltd.); 2. Vice-presidents (1) Mr. Ernest J. Brown; (2) Mr. F. G. Rice (Messrs. Rice and Son); (3) Mr. E. J. Strange (Tunbridge Wells); (4) Mr. Leonard Horner (Messrs. Ashby and Horner). 3. Treasurer, Mr. F. L. Dove L.C.C. 4. To fill vacancies on the Executive Council: (1) Mr. A. B. H. Colls (Messrs. Trollope and Colls, Ltd.); (2) Mr. Walter Lawrence, jun. (Messrs. Walter Lawrence and Son); (3) Mr. F. M. May (Messrs. Holland and Hannen and Cubitts, Ltd.); (4) Mr. James F. Parker (Messrs. Patman and Fotheringham, Ltd.); (5) Mr. E. S. Rider (Messrs. T. Rider and Son); (6) Mr. William Willett. 5. hon. auditors: (1) Mr. Eric M. May (Messrs. Holland and Hannen and Cubitts, Ltd.) (2) Mr. G. C. Hudson (Messrs. Hudson Bros.).

A hearty vote of thanks was given to Mr. James S. Holliday (Messrs. Holliday and Greenwood, Ltd.) for his services during the past year.

The annual report from the Council (from which extracts are given below) was approved.

Twenty-eighth Annual Report.

"The Council, in presenting the annual report, regrets that although the building trade has to a certain extent improved, it still continues to be in a very unsatisfactory condition. For some years past the competition has been particularly acute, and this, coupled with the general unrest in the country and the prospective heavy burdens about to be imposed on employers by the Legislature, render the prospects of a desirable change anything but promising.

"Attention has been given to Parliamentary matters affecting the building trade: steps have been taken to try to effect such changes as are desirable in existing Acts, and to judiciously modify Bills of importance before the House of Commons. In these matters the Council has been glad to co-operate with other bodies.

"The Council has given much time and care to the formulation of an Agreement for Sub-Contractors who are specified by architects, and to the alterations

which this document entails in the Agreed Form of Contract. The proposed Form of Sub-Contractor's Agreement was submitted to the National Federation, being one of the signatories of the Agreed Form, and was practically approved. It was then brought informally before the R.I.B.A. at a Conference on the subject, and it is now under the consideration of that body.

"The President, Colonel Geo. Haward Trollope, and Mr. J. Styles kindly gave evidence before the Home Office Departmental Committee, which Committee was appointed to investigate the dangers attending the use of white lead in the preparation of paints. Having considered the matter most closely, the Council came to the conclusion that, in the interests of the trade, it would be preferable to endeavour to exclude altogether the use of white lead than to have exacting regulations introduced by the legislature which would be very irksome to employers.

"Mr. F. G. Rice is the representative of this Institute on the Home Office Committee, and the Building Trade is under great obligations to him for his close and valuable assistance in the matter.

"The movement to re-establish a system of apprenticeship has occupied the attention of the Council, and suggestions have been submitted to the London County Council which are now under consideration.

"The existence and utility of technical schools, proper discipline, payment of premiums, etc., are matters which affect this question and need careful consideration.

"Your Council and the Council of the London Master Builders' Association jointly took part in the consideration of Suggestions made by the Quantity Surveyors' Association on the question of Items to be Embodied in all Preliminary Bills. The results of the Councils' comments on the suggestions were forwarded to the Q.S.A. in due course, and it is to be hoped that good will be derived in consequence.

"The Council awarded the following prizes and rewards to successful students at the recent theoretical and practical examinations held by the City and Guilds of London Institute:—

1st Prize for Carpentry & Joinery, Silver Medal & 30s.	
2nd " " " " " " " " " " " " " " " "	Bronze " " 20s.
1st " " " " " " " " " " " " " " " "	Silver " " 30s.
2nd " " " " " " " " " " " " " " " "	Bronze " " 20s.

"The following grants were made from the Institute Benevolent Fund: Builders' Benevolent Fund, £100; Builders' Clerks' Benevolent Institution, £10 10s.; Provident Institution of Builders' Foremen and Clerks of Works, £10 10s."

LONDON MASTER BUILDERS' ASSOCIATION.

The Council of the London Master Builders' Association met on March 21st, when Mr. James S. Holliday (president) was in the chair.

The report of the Bricklayers' Conciliation Board meeting held on March 14th was read, and the Finance Committee's report was read and approved.

The rate of subscription to the Association for the year 1912 was determined upon.

Certain legal cases were reported, and were referred to a special committee for consideration and report.

The various committees and representatives in other bodies were chosen.

Matters were considered connected with a petition to the Prime Minister against the Trade Disputes Act (1906). The petition was presented by Mr. Basil Peto, M.P.

Applications for proposed alterations in working rule agreements with the Amalgamated Society of Carpenters and Joiners and Stonemasons were received together with an application for the formulation of a working rule agreement with the labourers. They were referred to a Special Committee for consideration and report.

Various other trade matters of interest and importance were discussed.

New members of the Association were elected: (1) Ordinary Member, Messrs. Allen Fairhead and Son, Enfield; (2) Associate Member, Messrs. John Daymond and Son, Westminster. New member nominated: (1) Associate Member Messrs. Messers, Ltd.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION DINNER.

The thirty-fourth annual dinner of the above Institution was held on Tuesday March 26th, at the Holborn Restaurant.

Mr. R. Dudley Bartlett, the president proposing the toast of "The Builders Clerks' Benevolent Institution," said that when he looked down the long list of past-presidents and saw the names of practically all the great men of the building trade, he felt very much like a Skipper sardine in a school of whales. The list included the names of Mr. Rider, and, no less important to him, that of H. H. Bartlett, his father, who occupied the chair twenty-one years ago. Last year he continued, the Institution had paid £760 to thirty-one pensioners, out of an income of £790 all told. Their total expenditure amounted to £870. The ordinary income, together with dividends fell short of this amount, which had to be collected. The Institution had paid altogether £15,000 in pensions and nearly £1,000 in presentations to orphan working schools.

Mr. H. A. Bartlett, president of the Institute of Builders, proposing the toast of "The Architects and Surveyors," said that the modern architect was a compendium of useful knowledge. He had to be artist, lawyer, engineer, sanitarian, expert, financier, and diplomatist; but he (the speaker) objected to the architect taking on the business of building. At the present rate, the builder would soon cease to exist, becoming merely the agent for sub-contractors. He hoped it would some day be realised that a builder could do a bit of joinery and dig a hole without the intervention of an expert. With respect to the surveyors, it was really extraordinary how those gentlemen managed to satisfy all parties.

Mr. Chas. Frankiss having replied for the architects,

Mr. Walter Lawrence, responding for the surveyors, said, with reference to industrial unrest, that if there were no piecework there would be fewer strikes. With regard to the Institution, he believed that a more direct appeal to architects and surveyors would meet with generous response. Speaking for the surveyor, he was only too glad to testify to the fine feeling which always existed between surveyors and builders' clerks.

Mr. F. S. Oldham, proposing the toast of "The Builders and Builders' Merchants," mentioned that Mr. Rider who would reply to the toast, was President of the Institution during 1878-9.

Mr. Thomas F. Rider replied for the builders, recalling the first dinner of the Institution in the Guildhall Tavern, Cheapside.

Mr. Alexander Ritchie, responding for the builders' merchants, said that the builders' clerks were getting as bad as the architects and surveyors. He entreated them to forsake the little ro in. by 12 in. window and the notices saying that no one could be seen except by appointment.

Mr. John Austin, the secretary, then announced that, including a gift of twenty guineas from the president, the subscriptions amounted to a total of £414 2s. 6d.

Mr. Leonard Horner then proposed the toast of "The President," to which Mr. Bartlett replied.

SMOKE ABATEMENT CONFERENCE.

At the conference on Smoke Abatement, held in connection with the Smoke Abatement Exhibition at the Agricultural Hall, Islington, seventy-one public authorities, including nine foreign municipalities, were represented, and the Swedish Government and the Dutch Ministry of Commerce sent delegates.

Sir Arthur Church said that, whatever the injurious effects of the carbon and mineral matters in smoke, it was not to these constituents that the damage done by coal smoke to building stones, to mural paintings, and to objects of metal could be attributed. The offending constituents of soot were those associated with, and absorbed by, the carbon which formed its basis, notably sulphur compounds. Many instances of decayed stonework in cities might be cited to prove this point. The outer face of the Sheldonian Theatre at Oxford contained 19 per cent. of gypsum, all, save the veriest trace, formed from carbonate of lime by the attack of atmospheric sulphuric acid; and Magdalen College Tower gave more than 11 per cent. The interior walling of Westminster Chapter House contained just 18 per cent. of the same product, while in St. Paul's Cathedral the black stalactitic incrustation hanging to the underside of the cornice above the colonnade and below the dome, which was some inches deep in places, contained nearly 74 per cent. of gypsum. The abatement of the smoke nuisance, or even its entire abolition, however great the advantages to health and comfort, would not get rid of the injury and pollution caused by sulphuric acid.

Mr. Noel Heaton contended that it was scarcely too much to say that the smoke nuisance had in towns rendered the execution of a satisfactory and permanent work of decorative painting one of the most difficult problems of applied chemistry.

The effect of town air on metal work was the subject of a paper by Dr. S. Rideal; and Mr. Harry Redfern, on behalf of the Society for the Protection of Ancient Buildings, dealt with the effect of smoke on buildings.

Mr. R. G. K. Lempfert, superintendent of the Forecast Division of the Meteorological Society, by a comparison of the sunshine statistics of urban and rural stations, showed that the general impression as to the diminution of fog in London during recent years was confirmed by official figures, and that the ratio of town to country sunshine had no tendency to return to the low values recorded in former years. While it was

impossible to attribute the differences in the duration of bright sunshine entirely to the effect of smoke, it was not unreasonable, he thought, to attribute regular and progressive changes in the ratio of town to country sunshine to that cause.

Smoke and fog was the subject of a paper by the Hon. Rollo Russell, who pointed out that the last ten years had been remarkably free from dense fogs, not only in London, but in the South of England generally. The worst offender was the domestic fire, as was proved by the fact that the darkest fogs had been on Sundays and Christmas Day.

At the concluding meeting of the Smoke Abatement Conference Dr. H. A. Des Vœux read a paper in which he urged that the Government should appoint a Royal Commission to inquire into the whole subject of smoke abatement. The Act passed in 1878, he said, had been a failure, and the time had come when the cause of that failure should be inquired into by an impartial tribunal. He concluded by moving a resolution recommending that the offer of Mr. Gordon Harvey, M.P., to introduce into Parliament the Smoke Abatement Bill prepared by the Smoke Abatement League, be accepted, and that, failing any prospect of the Bill being passed next year, steps should be taken to organise a deputation to the Government to urge the appointment of a Royal Commission. The resolution was carried.

Other resolutions were passed advising that steps should be taken to study the economic phases of smoke pollution, and impressing on local authorities the importance of establishing classes for the training of stokers and the granting of certificates of competency.

LEGAL.

Who Pays the Quantity Surveyor?

At Leicester County Court, R. E. Carpenter and Son, quantity surveyors, sued Edward Baxter, for £28 14s. 10d., for professional services, etc. On behalf of the plaintiffs it was stated that the defendant had contemplated erecting a house, and plaintiff claimed 2½ per cent. on the lowest tender sent in for the erection of this house, and £4 10s. in respect of payments for printing. Mr. Carpenter received his instructions from the architect for the defendant. The plan was sent to M. Carpenter, and quantities were submitted to the architect. Subsequently when the tenders were sent in the cost was far over £500 (the lowest being £880), and Mr. Baxter then decided not to build.—For the defence it was contended that there was no case against the defendant. If a debt had been incurred it should be recovered from the architect, because the architect had no authority to pledge the credit of the defendant.—His Honour said it seemed to him to be merely a question of who should pay. There was no question about the work being well done.—Defendant said he gave the architect instructions to get out plans for a house not to cost more than £550, and repeatedly told him not to go beyond that figure.—Mr. J. B. Withers, president of the Sheffield Society of Architects, said it was not the custom among Sheffield architects to employ quantity surveyors to take out quantities. He only knew two such cases, including the present.—His Honour, in giving judgment, said this was not a question whether Mr. Carpenter

had done his work; the question was who was to pay him? The plaintiff had not, in his opinion, made out that the architect in this case had the authority to pledge the credit of the building owner by employing the quantity surveyor. The architect set Mr. Carpenter to work, but had no authority to pledge the credit of his client beyond £550. He therefore found for the defendant.—A stay of execution for 21 days was granted, notice of appeal being given.

NORTHERN COUNTIES FEDERATION OF BUILDING TRADE EMPLOYERS.

A quarterly meeting of the board of representatives of this Federation was held at the Corporation Hotel, Middlesbrough, on March 14th, Mr. John Proud (West Hartlepool), president, in the chair, when 34 representatives were present.

The Executive Council had sent a resolution to the Government requesting an extension of the date at which the National Insurance Act should come into operation; but the Secretary reported that the Act would come into force on the 15th July next, an authoritative pronouncement having been given that the date would not be extended. The Insurance Commissioners had been approached with respect to their issuing explanatory instructions respecting the working of the Act, and had replied that the same had been under consideration, and would be issued shortly.

The Executive Council recommended support of the principle of the Trade Dispute Reform League's Bill to explain and amend the law relating to trade unions and trades disputes.

The secretary presented a tabulated statement of the stonemasons' working rules within the Federation area, together with the proposed alterations.

It was resolved that the Federation should invite the operative stonemasons to meet the representatives of this Federation to discuss the question of having a uniform worked stone rule for the whole of the Federation area.

The Executive Council reported that the secretary, at the request of the Darlington Association, had visited Darlington, and with a deputation of the Darlington Association had waited upon the Streets Committee and discussed with them the conditions of contract with the Darlington Corporation. The points at issue were the arbitration clause and the question of payments. The interview was considered very satisfactory, and it is believed that the Darlington Association will obtain the amendments sought. A request for the adoption of the National Form of Contract by the Streets Committee and the Corporation was preferred, and would be further considered by the Corporation. Correspondence with H.M. Office of Works upon the conditions of contract in connection with the Darlington new Post Office was read. The form used by H.M. Office was in accordance with the general requirements of the Federation.

A letter was read from the National Federation covering a letter from the Institution of Municipal and County Engineers with respect to priced schedules. The Institution's letter was to the effect that the Council of the Institution are of opinion that it is not necessary or desirable that Priced Bills of Quantities and Schedules should be sent in openly with tenders, but that it is

essential that the prices in the bills of quantities and schedule should be approved by the engineer before a tender is recommended for acceptance, and that the Council of the Institution will be prepared to recommend the members to adopt this principle in future contracts.

The letter was received with satisfaction, and it was resolved that the letter should be circulated among the members.

The Secretary reported that the Leeds Association had received notice from the joiners for an increase of wages from 9d. to 10d., and that at Bristol a strike exists, the men having refused an offer of $\frac{1}{2}$ d. advance and demanding 1d.

It was agreed to hold the next quarterly meeting at North Shields in June next.—*Condensed from Report by W. H. HOPE, Solicitor, Secretary.*

NEWS ITEMS.

Rebuilding of Chelsea Hospital for Women.

At the annual meeting of the Chelsea Hospital for Women, which was held last week, Lord Castlereagh announced that a site of an acre and a quarter had been presented by Lord Cadogan for the purpose of rebuilding the hospital.

Institute of Sanitary Engineers.

The examination board of this Institute recently submitted to the Council of the Institute a report recommending the reorganisation of their examinations upon a broader basis. The Council has now adopted the report, a new syllabus has been drawn up, and the Board of examiners has been augmented. The new scheme will be in working order for the next examinations to be held in May.

London Master Builders and "Peaceful Picketing."

In the House of Commons, on March 25th, Mr. Peto presented a petition from members of the London Master Builders' Association praying the House to pass legislation without delay providing that the number of men constituting a picket during trade disputes should be limited to two—(derisive Labour cheers)—and should be permitted only to attend a place where a person works and carries on business, and making all unions, whether of masters or of men, responsible for their acts the same as ordinary citizens.

Business Development.

Messrs. William Firth, Ltd., iron and steel merchants, Water Lane and Wilson Street, Leeds, announce that they are opening a branch office at Corn Exchange Chambers, Sheffield, under the management of Mr. G. Clifford Whitaker, who was formerly associated with Messrs. Whitaker Brothers, railway contractors, Horsforth. Mr. Whitaker will principally devote his attention to dealing in new and second-hand contractors' plant, etc., whilst the firm's old-established business in rails, girders, iron and steel bars, plates, etc., will be continued as before at the head office, Water Lane, Leeds.

The Iron and Steel Institute: Carnegie Gold Medal.

The Council of the Iron and Steel Institute have this year decided to award the Andrew Carnegie Gold Medal of the Institute to Dr. Paul Goerens, of Aachen. Dr. Goerens is a distinguished metallurgist, and is a member of the staff of the

Royal Technical College of that city. He has made many contributions to scientific metallurgy, and in 1910 he was awarded one of the Carnegie Scholarships of the Iron and Steel Institute, to enable him to pursue his investigations on the influence of cold-working on the properties of iron and steel. The Gold Medal is now awarded to him in recognition of the highly meritorious character of his research work on this subject, which was published last year in Vol. III. of the Carnegie Scholarship Memoirs of the Iron and Steel Institute.

Changes of Address.

Mr. Alfred Saxon Snell, F.R.I.B.A., announces that his address is now 9, Bentinck Street, Manchester Square, W.

Messrs. Gale, Durlacher and Emmett, architects and surveyors, have removed their offices from No. 33, New Bridge Street, Ludgate Circus, to No. 15, New Bridge Street (opposite). Their telephone number will in future be—City 6888, and their telegraphic address—"Galdono, London," as hitherto.

Mr. Alfred Cox, F.R.I.B.A., has moved his offices from 4, Adam Street, Adelphi, to 34, Henrietta Street, Covent Garden, W.C.

Mr. R. W. Collier, F.R.I.B.A., has removed to 5, Lancaster Place, Strand, London, W.C. (Telephone, 10427 Central.)

Glasgow Institute of Architects.

A meeting of the newly elected Council of the Institute was held last week, when the following office-bearers were elected:—President, Mr. Alexander N. Paterson, M.A., A.R.S.A., F.R.I.B.A.; vice-presidents—Messrs. J. K. Hunter, F.R.I.B.A., Charles R. Mackintosh, F.R.I.B.A., and John Watson; auditor of professional accounts, Mr. John B. Wilson, F.R.I.B.A.; secretary and treasurer, Mr. C. J. MacLean, writer, 115, St. Vincent Street. The committees for the ensuing year were also appointed. A communication received from the R.I.B.A. as to "Professional Practice and Schedule of Charges of Architects" was remitted to the Practice Committee for consideration. A letter was read from the secretary of the National Housing and Town Planning Council stating that in view of the dispute in the coal-mining industry it had been decided to postpone the conference to be held in Glasgow until April 29th and 30th next.

CORRESPONDENCE.

Street Name-plates.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I have read with interest your editorial note on "Street Name-plates" in your issue of March 20th. It is certainly a matter that demands serious attention, as regards legibility, design, uniformity, and the proper place and height at the corner of a street or thoroughfare.

One point I have not seen mentioned, but which I think is of great importance, is the inability to make out a sign in the dark. If some kind of luminous name-plate or paint could be provided it would prove a boon to the public. The best name-plate I have noticed is in the form of a white tile with the name in bold black letters, burnt in. They are distinct, clean, and require no attention.

JNO. A. BARRETT.

COMPETITIONS.

LIST OF COMPETITIONS OPEN

APRIL 20TH. ADDITIONS TO SCHOOL DALBEATTIE.—The School Board of the Parish of Urr invite competitive plans of a proposed addition to Dalbeattie Higher Grade School of 3 class-rooms to accommodate 50 pupils each, and technical rooms for wood work, cooking and laboratory. Plans, with estimates of each of the works, to be lodged with James Little, solicitor, Dalbeattie, Clevenston, to the Board, not later than April 20th.

APRIL 20TH. BIRMINGHAM BLUE COAT SCHOOL.—Competition strictly limited to Birmingham architects. In a preliminary competition, three designs will be selected, and the authors will be paid £50 each to develop and redraw their plans to a larger scale, showing further details. In the event of the Government failing to proceed with the second competition, the authors of the three designs will be paid £25 each. Assessors, Mr. G. H. Hunt, F.R.I.B.A., of London, and Mr. Charles E. Bateman, F.R.I.B.A., hon. consulting architect to the Government. Drawings to be delivered by midnight of April 20th to Mr. William Bolton, Secretary, The Blue Coat School, Birmingham.

MAY 1ST. PUBLIC BATHS, WOMBWELL, YORKS.—Wombwell U.D.C. invite designs for swimming-baths to be erected on Hough Lane. Premiums, £40, £30, and £20. Stamped and addressed in a foolscap envelope to W. Quest, surveyor to the Council, Town Hall, Wombwell.

MAY 15TH. COUNCIL OFFICES, PORTLAND.—Portland U.D.C. offer premiums of £50 and £10 respectively for first and second designs. Particulars (deposit 10s. 6d., returnable) from R. A. Connatt, Clerk to the Council, Offices, New Road, Portland. [The date has been extended from that formerly announced.]

JUNE 1ST. INSTITUTE, NETHERTON, DUNFERMLINE.—Cost not to exceed £70. Premiums, £20, £15, and £10. Assessors, Mr. E. A. Jamieson. Apply, Secretary, Carnegie Trust, Abbot Street, Dunfermline.

JUNE 28TH. TOWN PLANNING, HALE.—Premiums of £50 and £25 are offered for a town-planning scheme.—Address, Council Offices, Hale, Cheshire.

JUNE 30TH. MUNICIPAL BUILDING, PADIHAM.—Designs for town hall, bath, etc., are invited. Premiums of £40 and £20 are offered. Address, J. Greggs, A.M.Inst.C.E., Surveyor's Office, Padiham.

AUGUST 30TH. THE HENRY SAXON SNELL ESSAY.—The Henry Saxon Snell prize of fifty guineas and silver medal of the Royal Sanitary Institute is offered for an essay on "Suggestions for Improvement in the Ventilating, Lighting, Heating, and Water Supply Appliances and Fittings for an Operating Room and its accessory rooms for a General Hospital of 20 Beds (no Students)." Essays (in which two competitors of different professions or crafts may join) to be delivered before 4 p.m., August 30th, to the Secretary, Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., from whom full particulars may be obtained.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY
APRIL 10th, 1912.

Volume XXXV.

No. 899.



ENTRANCE LODGE TO "DERRY'S WOOD," WONERSH, SURREY
GEORGE ALEXANDER, ARCHITECT.



BANK PREMISES, NUNEATON. BATEMAN AND BATEMAN, ARCHITECTS.

These premises were erected for the Union of London and Smith's Bank and for Wm. Cawthorne and Sons, printers and stationers, in the Market Square, Nuneaton. The ground floor is occupied by the banking room, manager's room, and staircase to offices over; at the rear is the retail shop, with stores above it. The bank strong-room is in the basement, which required very careful treatment owing to flood water rising from the river a short distance away. Clipsham is the stone used for the elevations.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 10th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 899.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

A Book on French Romanesque Architecture.



It is remarkable how much attention has been given of late years, in various important works, to the history and development of architecture during the Romanesque period. The great interest of this period of architectural history lies in the fact that in it we trace the influences which led up to the development of the

great mediæval style of architecture. Throughout the whole of this phase of architectural history we see the principles which were to govern mediæval architecture gradually struggling into existence, mainly under the influence of the experiments in roofing-in a great church in an effective and monumental manner; as Mr. Prior put it in a remarkable lecture delivered last year at University College, the business of the early mediæval architects was mainly to cover in a church in the best manner; that problem achieved, all the rest followed. A further interest in connection with the Romanesque period is that, if we trace it to its commencement, it takes us back to the first development of the plan of the Christian Church, which, as a plan, was settled in its main features before the question of its architectural treatment assumed so much importance. The early Christian churches were covered with timber roofs, which were liable to destruction, by fire. The general form of three-aisled plan being accepted, how could this be roofed-in so as to be permanent and monumental, to preserve the section with the high centre and lower side-aisles, and at the same time provide for efficient lighting of the interior? The struggle to solve this problem was what made Gothic architecture.

The latest book on this subject, by M. de Lasteyrie*, is one of the finest books on a chapter in architectural history which have been produced. It deals only, it is true, with the development of Romanesque architecture in France, which however is by far the most important, since it is out of French Romanesque that Gothic architecture arose. But the author treats his subject from the commencement, starting from the Latin basilica, out of which the mediæval cathedral arose; and on this part of the subject he has much to say that is of interest and something that is new. The book is crowded with illustrations (731 in all), and is admirably written; the author is no propounder of novel and startling theories; he treats his great subject in a thoroughly sane and logical manner, giving full reasons for all his conclusions; and has produced a work which no good architectural library can afford to be without. At present only the French edition has appeared; a translation of the book into English would be an undertaking worth considering.

In the space we can afford to it here our object will be mainly to suggest what lessons or hints for modern church architecture may be derived from the study of the subject; the interests of this journal lying more with architecture than archæology; though no architect who takes real interest in architecture as an art and not as a mere business can afford, or will be content, to overlook its past history.

But we may say a word, in the first instance, on the part of the book which deals with the evolution of the Basilica Church, a subject which M. de Lasteyrie goes into very fully. He considers that the origin of the basilica church is not so simple a question as it has sometimes been considered. The old idea that the early Christians possessed themselves of some of the Pagan basilicas and made use of them as churches has of course long ago been given up; the basilica was a business building, and was commonly open along one side, and the interior ranges of columns were returned across the ends, which would not have rendered them suitable for a church; besides which, the use of basilicas for business did not come to an end with the official adoption of Christianity; they must have been still wanted for their original purposes. The idea that the form of plan was taken from apartments in private houses, in which Christian services were first held, is opposed to the fact that such apartments can only have been found in houses on a palatial scale, and that there is no evidence of their existence except the one plan (Fig. 1) which has been, as the author says, "disengaged" from the ruins of the palace of the Cæsars on the Palatine; nor would Christians at the early period have been likely to find accommodation for their services in the houses of the wealthy. As to the apse terminating the orthodox Christian basilica church, the author points out that the apse was not so general or so necessary an adjunct to the judicial basilica as is commonly supposed; that on the other hand the apse was a very common feature in Roman buildings of various kinds; and, furthermore, that the altar, in the earliest Christian period, was commonly the tomb of a saint as well as the communion table, and the apse was a form in use already in funeral chapels. He sums up the argument thus:—

"I am convinced therefore that the origin of the Christian basilica is more complex than is usually supposed. From the basilica of the forum, the Christians took the oblong form,

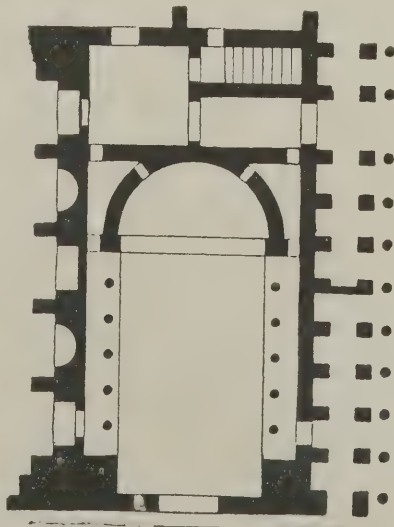


FIG. 1.—PLAN OF PRIVATE BASILICA ON THE PALATINE, ROME.

*L'Architecture Religieuse en France à l'époque Romane: ses origines, son développement. Par R. de Lasteyrie, membre de l'Institut. Paris: Alphonse Picard et fils; 1912.



FIG. 2—THE ABBEY OF RIQUIER (AFTER AN OLD MINIATURE).

the division into parallel galleries, and above all the higher elevation of the centre gallery, which allowed of the interior being lighted from above. From various public places of gathering, and also from certain funeral monuments, they took the idea of the apse. From private houses they took the atrium forecourt, and also the habit, which long prevailed, of adding to their churches subsidiary buildings, without consideration of the external disfigurement of the building by these additions."

Among the illustrations of interest in the book is that which we give as Fig. 2; a reproduction of a miniature in a manuscript dated 1088, giving a view of the Abbey of Saint-Riquier. M. Durand, in a monograph on the subject of this abbey, states that he has found proof that it was founded by the Abbot Angilbert in the year 800, and as this church was not demolished till the close of the eleventh century, we may presume that the illustration is an endeavour to represent the original church. The towers are no doubt of wood, and their prominence possibly throws some light on what may have been the appearance of some of the early Saxon cathedrals of England, a mediæval description of one of which conveys the impression of its having a large wooden tower with gilt ornaments. That some peculiarities of Saxon architecture find their counterparts, or perhaps their origin, on the Continent, is apparent from the design of the porch at Lorsch (Fig. 3), where we find the same straight-lined triangular wall-arches as are found in Saxon work in England. The original foundation of Lorsch dates from the end of the eighth century; M. de Lasteyrie gives reasons for doubting whether the porch as it stands is really part of the original building, which was almost entirely burned in 1090, but he thinks it probable that it is at any rate a re-erection of the original design. The interest of the illustration in Fig. 2, however, is not only that it gives an idea of a church of early date with a tower at each end of the nave, but it is a suggestion which might be carried out in a modern church design and produce a very fine and effective building; and if people of conservative ideas criticised such a treatment, in view of this ancient

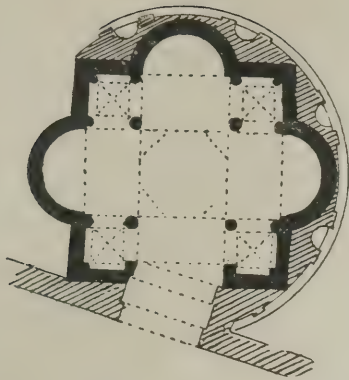
illustration the architect might reply, in the words of Malvolio—"There's example for it."

The possibility of making more use of the square, or approximately square, plan in churches is suggested by the plans of some of the Romanesque churches of the Carolingian era, of which a curious and little-known example is given in the plan of the church of St. Satyrus at Milan (Fig. 4). In reference to this one cannot but regret that none of the plans given in the book have any scale attached to them; but that is unfortunately a common defect with French architectural publications. The plan has some resemblance to that of St. Mary Woolnoth, except that in the latter the columns are proportionately rather closer to the angles, and there are of course no side apses. But a fine modern church plan might be based on this idea, with the choir in the right and left spaces, and the organ in the apses behind them. A beautiful and most effective interior might be made out of this plan, of a Classic, Byzantine, or Renaissance type; it would not lend itself to Gothic treatment.

The possibility of roofing churches with a solid roof, both external and internal, instead of the stone vault with a timber covering over it, is constantly thrust upon one's attention in studying the sections of many of the early Romanesque churches. A cross-vault must necessarily have a timber roof over it (unless in these days we prefer a steel one), for its outer form is not such as could be made watertight, nor could it in any case be agreeable in appearance; the cross vault is essentially a roofing for internal effect only. Such a section as that of the church of St. Martial at Limoges (Fig. 5) is somewhat tantalising to look at; it seems so easy on such a section to render a church entirely monumental in structure; fill up over the arches with concrete and cover the whole with stone slates. Of course, in a sense, that might be said to be going back to an imperfect and primitive form of design. With the cross vault we have got the pressure of the vault confined to the salient points where the wall can be buttressed, and we can have as large windows as we like between. On the barrel vault principle, as used in the Romanesque period, the interior treatment is as shown in the view in St. Sernin Toulouse (Fig. 6), where the roof is apparently carried by a series of heavy transverse arches, one over each pier, with lighter shell between; but it is difficult to understand what structural motive the builders had in these separate heavy arches, as they do not take the weight of the intermediate parts of the barrel vault off the walls. They may, however, have had a structural use in this way, that they may have been the only portions built on a specially constructed strong centering, and a light centering of boards could then have been laid from one arch to the other, on which to build the intermediate portions of the vault. Beyond this, their structural function must have been an illusion; they made the roof look stronger, and carried up into it the main lines of the architectural substructure, that was all.



FIG. 3.—LORSCH ABBEY PORCH.

FIG. 4.—PLAN OF THE CHURCH OF ST. SATYRUS.
MILAN.

but the Romanesque builders nevertheless were so devoted to the heavy transverse arch that they persevered with it for some time after the quadripartite vault had come into use, when it was not only useless, but added an extra pressure upon the buttresses. It would be quite possible, however, with the assistance of ferro-concrete, or of steel joists, to make these transverse arches concentrate all the weight of the vault on the buttressed points, just as completely as with the quadripartite vault, by carrying the intermediate portions on steel joists bearing at each end on the main arches. But then there comes in the difficulty of lighting. In the section in Fig. 5, it is obvious that the upper part of the church must be very dark. It would be quite possible, however, to get over that by small lights under the eaves of the nave, and some larger ones in the upper storey of the aisles, without endangering the structure. There is the basis in that for a new attempt at a church with solid roofing

We have reproduced, as Fig. 7, the view of the interior of St. Georges de Boscherville, as one of the finest examples of the grand masonic style of the French Romanesque, with its solidly designed piers and round arches. Here the barrel vault has just been abandoned, and the quadripartite vault springs from the heavy wall-shafts. It does not quite look as if it belonged to the substructure; indeed, it is quite possible that there may have been some interval between the finish of the arcade and triforium and the

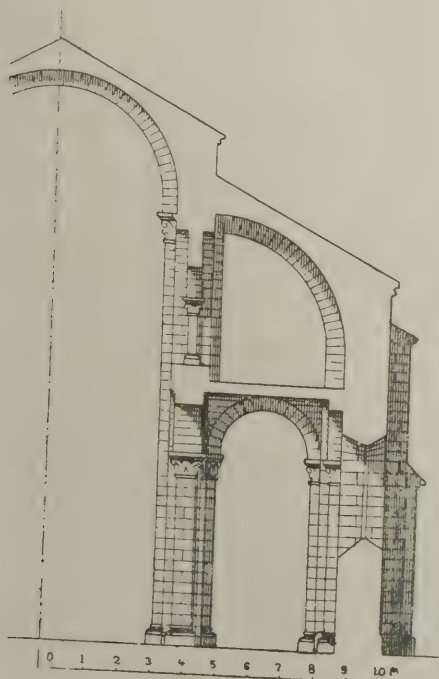
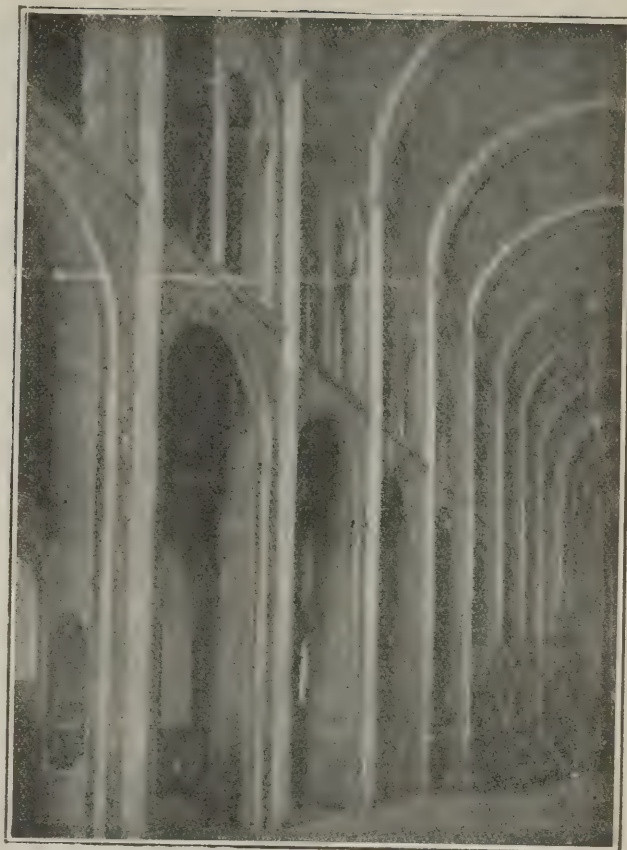
FIG. 5.—CHURCH OF ST. MARTIAL, LIMOGES: SECTION
THROUGH NAVE.

FIG. 6.—ST. SERVIN, TOULOUSE: NAVE ARCADE.

building of the vault; but the whole forms a grand and impressive piece of Transitional architecture.

The influence of the remains of Roman architecture on many of the details of the French Romanesque is most remarkable. At the very time that they were struggling with their new problem of vaulting, the builders seem to have been so strongly impressed with the remains of Roman architecture, which no doubt existed at that time in France in much greater profusion than at present, that they would introduce on the exterior of a tenth or eleventh century church a piece of almost pure Classic work. A remarkable instance of this is given in the illustration of part of the details of the porch of Notre-Dame-des-Doms at Avignon, on page 419 of M. de Lasteyrie's book. Here we have the Corinthian capital, the Classic cornice with carved modillions and egg-and-dart ornament, and the architrave with its three receding fascias, almost exactly reproduced, to decorate the entrance to a building which in its main design has nothing in common with Classic architecture. The doorway seems not infrequently, in architectural history, to have been made the opportunity for experiments not extended to the remainder of the building; thus we find so often in Elizabethan buildings the doorway framed within Classic columns and an entablature, though all the rest of the building is more Gothic than Classic. The difference is that in the Elizabethan building the Classic doorway is a move in advance, the taking up of what was regarded as the new style, while in the case of the French Romanesque churches it is a harking back to the remains of an earlier period.

M. de Lasteyrie's treatise includes a separate chapter on mural paintings of the Romanesque period, and another on the capitals. These latter, numbers of which are illustrated, form a most extraordinary collection in their variety of adaptations and variations from Classic and Byzantine forms, together with eccentricities of design which can be referred to no precedent, and seem merely the result of the desire for novel experiment. Many of the capitals of this class, it must be admitted, are more curious than beautiful—not an uncommon result, even in our own day, of the search after novelty merely for the sake of novelty.

At the close of his preface, the author expresses his hope to be able to produce a similar study of the churches of the complete Gothic period in France. We hope he will; his book could not fail to be of value. In the meantime, he adds, "I shall be satisfied if I have been able to interest my readers in our Romanesque architecture, to inspire them with the admiration for it which it merits, and thus to contribute in my modest way to protect these dear old stones from the dangers which threaten them." What exactly these dangers are the author does not say; but we are very much afraid that the chief danger to the ancient churches of France lies in the organised restorations carried on under the department of "Monuments Historiques."

The Roman Soldier and Roman Architecture.

MR. HALSEY RICARDO has something interesting to say on this subject in the April issue of THE ARCHITECTURAL REVIEW. He recalls the fact that, according to the Commentaries, war in the time of Cæsar was essentially a summer affair: when the days grew short both sides agreed to hibernate, and there was to be no resumption of hostilities until the spring should be well under way. The number of soldiers thus left in Gaul may, at an easy estimate, be put at 50,000, and the question was—what did they do with themselves during their enforced respite from fighting? It is clear that they must have been kept pretty actively employed, else they would have got out of hand, and we are not allowed to hear of any mutinies during the Emperor's absence. The principles of Roman construction supply the answer. The two salient and primary characteristics of Roman building are (a) that it can be done by unskilled labour under skilled direction, and (b) a kind of agonised ingenuity to be quit of the carpenter with his wood scaffoldings and timber centerings. In cantonments, then, building was done by

the soldier, with forced labour from the captives, and possibly also from impressed natives. It had to be done by men who were mainly stupid, largely unwilling, and to some degree malicious. These disabilities were kept in check and mastered by the superintendence of the officers and higher ranks of the soldiery, who plotted out the work to be done and supervised its execution. And the standard so set by the Roman army became the standard of construction at home as well as in the provinces, in the capital as well as in the military headquarters. The Roman centurion and master-builder could draw upon the artisans, the soldiers, the slaves, and the prisoners, to take part in the raising of stupendous walls, piers, and vaults; a few skilled men were needed to supervise the digging of the *pozzuolana*, to turn out the necessary large and small tiles, that played their various functions in the construction of these masses; to see that the army of hodmen deposited the stones, sherds, and brickbats evenly on the beds of cement mortar, that the mixers of this mortar tempered it with the proper quantity of water, and that the second army of hodmen carried this on to the building and properly grouted it in to the first army's deposit of stones. The thousands who composed these armies had only to do what they were told; the work was purely mechanical. We achieve the same result by machinery.

In the same issue of the REVIEW, Mr. W. H. Ward has an excellent article on "Rome under the Renaissance Popes," while Professor Lethaby and Mr. Harry Sirr both write about Inigo Jones. Other articles include "Jerusalem Doorways," by Mr. William Harvey; "Rock Gardens," by Mr. William Fitzherbert; and "The Planning of Delhi." Current architecture is represented by the International Bureau of American Republics, Washington (Messrs. Albert Kelsey and Paul P. Crét, architects), the Royal Academy of Music, Marylebone Road, London (Sir Ernest George and Alfred B. Yeates, architects), St. Wilfrid's Church, Kirkby-in-Ashfield (Mr. Louis Ambler, archi-



FIG. 7.—SAINT GEORGES DE BOSCHERVILLE; NORTH SIDE OF NAVE AND TRANSEPT

fect), and a three-light window for Bucklebury Church, near Reading (cartoon by Mr. Frank Brangwyn, glass by Mr. Silvester Sparrow).

Sir W. Richmond's Landscapes.

AT the Society of Fine Arts Gallery, there is a collection of small oil-paintings by Sir Wm. Richmond, of subjects in Italy, Greece, and Egypt, which are of considerable interest as presenting a new side of this artist's very varied talents. We have not hitherto known Sir W. Richmond as a landscape-painter, nor are these the kind of landscapes which are usually painted for exhibition; they are small oil studies of scenes which took the fancy of the artist, painted in the first instance, we may suppose, mainly to please himself and to carry away a record of an effective scene. There is a great deal of powerful originality about many of these small paintings; always there is the endeavour to convey the special character of the scene, as in "The Libyan Desert"; "Sunset, Girgenti"; "The Tiber," not in Rome, but out in the country; "The Convent Garden, Serpiolle," an especially good example. Architectural remains come into the programme, too; among others, a very effective view of the little temple of Niké Apteros seen between two of the large columns of the Propylæa which stand up on the foreground; and there are illustrations of the temple at Girgenti and of several Saracenic buildings in Cairo, Algiers, and Seville. It was quite worth while to exhibit these travelling studies in a collective form; they make an exhibition of more than usual interest.

Mr. Ralph Adams Cram.

MR. RALPH ADAMS CRAM, whose portrait we reproduce on this page, is a member of the firm of Cram, Goodhue, and Ferguson, now one of the leading combinations of architectural talent in America. Mr. Cram, who was born in 1863, is known principally as an architect; but he has also gained a considerable literary reputation by his writings on general and architectural subjects. He is a Fellow of the Boston Society of Architects and of the American Institute of Architects, of which he is chairman of the Committee on Education. He began to practise as an architect in 1889, and has since been jointly responsible with his partners for the production in the United States of a large amount of architectural work—ecclesiastical, secular, and miscellaneous, including the much-discussed Military Academy at West Point. Mr. Cram's literary work includes "Church Building" (1901), "The Ruined Abbeys of Great Britain" (1906), "Impressions of Japanese Architecture and the Allied Arts" (1906), and "The Gothic Quest" (1907).

The Awakening of London.

IN the "Report of the University College [London] Committee," which has just been issued, particulars are given of the recent developments in connection with the School of Architecture. It appears that the need for better accommodation for the School of Architecture has been prominently before the college authorities for many years, and that in view of this need, and also of the limited accommodation for architecture at King's College, the Senate appointed a committee to consider the organisation of architectural teaching. After receiving the report of the committee, the Senate decided, if and when funds were forthcoming for the provision of an adequate building, to combine the Schools of Architecture of University and King's Colleges in a building to be erected at the north-east end of the college site. In December, 1911, the money difficulty came to an end with the receipt of a letter from the Chancellor of the University (Lord Sebery) enclosing a "noble offer," from an anonymous donor, of £30,000 for the erection of buildings for a combined school of architecture, together with studios for the



MR RALPH ADAMS CRAM.

teaching of sculpture, the rearrangement of the School of Fine Art, and to accommodate the Department of Applied Statistics, including the Laboratory of Eugenics. This handsome gift, taken in conjunction with the more recently announced benefactions of more than £300,000 for London University, and of, we believe, about £40,000 for the new building for Bedford College for Women, would seem to indicate that London is at length wide awake to its responsibilities with regard to higher education; and it only remains to make the most of the magnificent architectural opportunities thus munificently provided.

New Buildings for Edinburgh.

THE example of London, or, perhaps, a correlative need for expansion, seems to have inspired Edinburgh with a desire for larger and more stately Government buildings. The Inland Revenue Offices in Waterloo Place are to be abandoned by that department, which will probably be accommodated in a large new block to be erected on some central site in the city. Provision must also be made for the new bodies set up by recent legislation—the National Insurance Act Commissioners, the Scottish Board of Agriculture, and the Scottish Land Court. It is said—with how much or how little authority we do not know—that a scheme is under consideration for the erection of "practically all the Government departments" in one vast building, and no doubt much could be said in favour of this idea. With respect to the internal economy, concentration is certainly a very commendable object; and, on an external view, it may be better to have one large and imposing building rather than several small ones. Yet the architect who should endeavour to carry out the principle or ideal of rendering a building expressive of its purpose would have some difficulty in reconciling such diverse functions. The Post Office authorities are to take over the Inland Revenue building, and they will also make large additions to the Telephone Exchange, extending the existing block in Rose Street by about one-third of its present size, at a cost of about £10,000. Building activity in Edinburgh in the near future will

receive a further much-needed impetus by the erection of five new schools, and by the extension of existing schools; upon which work the School Board contemplate an expenditure of £180,000. Moreover, as we have already announced in some detail in a recent issue, the Town Council are about to erect, in the Grassmarket, new headquarters for the City Police and for the Weights and Measures Departments—surely another problem in the hybridisation of buildings; while it seems quite likely that the scheme for laying-out the Calton Hill, and of building little or much upon or about it, will yet materialise. Altogether, the builders of Edinburgh, who know how to work nobly in a noble material, have in prospect an almost unexampled period of prosperity, which it is to be hoped may amply atone to them for the excessively lean years of recent experience; the Usher Hall, which is now assuming shape, being the only considerable building of public importance—except of course, Sir Robert Lorimer's beautiful Thistle Chapel at St. Giles's Cathedral—that has redeemed the industry from absolute stagnation.

Port of London Authority Preliminary Competition.

IN response to the competition announced in November last inviting the submission of preliminary sketch designs for new head offices for the Port of London Authority 170 designs were received. It was announced last Thursday that the Authority, on the advice of their assessor (Sir Aston Webb, R.A.), have selected the six designs sent in by the following architects, whose names are placed in alphabetical order:—

Mr. Robert Atkinson, A.R.I.B.A.

Messrs. J. A. Bowden and T. Wallis.

Mr. Edwin Cooper, F.R.I.B.A.

Messrs. Lanchester and Rickards, FF.R.I.B.A.

Mr. J. Reginald Truelove.

Mr. Ernest W. Wray.

The authors of these designs will be invited to take part in the final competition at an honorarium of 200 guineas each. The Authority do not propose to exercise the right they reserved to themselves of inviting designs from architects other than those who took part in the preliminary competition.



LIVERPOOL CATHEDRAL: DOORWAY FROM LADY CHAPEL TO VESTRIES. G. GILBERT SCOTT, ARCHITECT.

AN ADVERSE CRITICISM OF "NEO-GREC."*

BY ALAN L. SNOW, A.R.I.B.A.

The author contends that a purely Greek style is unfitted for modern requirements, and that the so-called "Neo-Grec" is not Greek in spirit or in form.

I SHALL endeavour to give you the arguments upon which I base two contentions. These are that a purely Greek style, with colonnades, pediments, etc., is absolutely unfitted for our uses and requirements, and that the manner of building at present known as "Neo-Grec" is not Greek at all, neither in the spirit of its design nor in the actuality of its appearance.

Most past styles, as they have been left to us, are in themselves unsuited to modern conditions in England, but of them all it seems to me that Greek is the most unsuitable. The charm of Greek buildings is in their shape as much as in their detail—in their long and low proportion. How can we transplant this into the tall modern building? We may maintain the same general proportion in the building, although its size is greatly increased. But it is too much to imagine that, by adopting in our larger edifices a similar treatment in detail to that which the Greeks gave to their smaller ones, we are perpetuating Greek architecture. We are doing nothing of the sort. Sometimes, perhaps, we may fitly use Greek forms for details, unless we can think of better; but even then they can only be used as a basis to work upon, not as a copy. We are doing quite wrong in increasing the size of the details as we increase that of the building; in enlarging things that were only meant to be small; in using them as our professed models the Greeks never used them, and in combining them with features which they either did not know or did not use. This reads like a summing up of the architectural fronts which the Romans applied to their buildings, and the case is indeed an exactly similar one. The attempt to adapt them leads to their entirely losing their Greek character. These new buildings of which we are so proud are Roman.

Greek architecture in England is joyless and cold—as cold as the Greek costume would be, and for the same reason. It was designed for a warmer, sunnier land. That this is felt even by those who attempt to practise it seems to be indicated by the way in which it becomes embellished. I was going to say enriched, but "embellished" seems somehow better to express the result that we see. In this embellishment, and in the increase of scale already referred to, its Greek character disappears. The simplicity of Greek is gone, and in its place is richness and extravagance; the architecture has become Romanised. We are doing just what the Romans did; we have turned our Philistine minds to Greek architecture, and produced a manner as far in spirit, proportion, and character from its beautiful inspiration as it could be.

Modern requirements of speed in erection have brought about a certain adaptability of one pattern to all positions quite unlike Greek, in which each small part received separate careful consideration. The Florentine Palaces, thirteenth-century Gothic, or a Cotswold cottage are more truly Greek than these modern street buildings.

Something very like these examples would have been produced by the Greek architects, given the same conditions and the same materials. Something of what they would do when faced by new needs and circumstances Byzantine architecture shows. With a new religion and a new social system, requiring different planning, and a new material—brick—they evolved a new architecture, from which the column and pediment, the console and the cornice, and many other features considered indispensable by Neo-Grecs, were conspicuous by their absence.

The complete absence externally of such features as these, in the imposing mosques which are but a development of the Byzantine style, shows how inessential they really are to architectural beauty, the secret of which lies in something higher than the mere manipulation and adaptation of such forms. Is not the Taj Mahal acknowledged to be one of the most beautiful buildings in the world? Yet none more opposed to Neo-Grec tenets can be imagined! In India, if anywhere, Greek would look its best; but there is at least one building there as beautiful as the Parthenon itself, and yet absolutely opposed to it, in its construction and in every detail. Cannot we attain to some such measure of architectural independence?

What is the distinguishing characteristic of this great Greek style? Is it not simplicity—a simplicity possible only because of the small size of even their greatest buildings? It is simple, too, because they adhered to one method only of building, and developed that until it could go no farther. This they were only enabled to do by a corresponding simplicity in their life and the problems of their architecture. Indeed, there were no problems in those days compared to those which face a modern architect. Their architecture goes but a very little way in helping to solve these, for it was so simple that we can use it in connection with only one feature—the pier. The Greeks evolved two forms of pier—circular and square, always used separately and each with its own distinct function. One of the most prominent characteristics of the Neo-Grec manner is the use of the circular pier stuck on to the square, the reasonableness of which proceeding will not bear examination. Neither will an enquiry into its beauty, to my mind. Whatever may be urged in its favour, it is not Greek; nothing further from the straightforward, logical architecture of the Greeks can be imagined. It is all of a piece with broken entablatures, curved pediments, and "suchlike contraptions."

Not only is it not Greek in form, but neither is it in spirit. No modern building, carried out in a purely academic Greek manner, using only Greek details and features, is so. Greek art itself would have been different in a different environment. Had we learnt truly the lessons of their architecture, we should never indulge in this literal, uncomprehending transcription of their style. We should not ignore all that has happened since—they did not. They did not invent an original architecture all their own. They too studied the past, and their understanding of study was the correct one—

the selection and perfection of certain features. Study means selection. They selected one method of construction—not one *manner of design*—and throughout all the variations of it which they used, it is never obscured; and the refinement and ornamentation which the crude essentials of this method underwent were all directed to the emphasising of the functions of the various parts—the vertical lines of the columns, the horizontal ones of the architrave, and the projections of the cornice. They evolved an *order* of building, and only by a strict adherence to this was possible the perfection they achieved.

By a close and never-ceasing study of construction they developed their beautiful architecture, as perfect a style as the world has seen, but not so perfect as to be universally applicable.

The Greeks were able to pursue the study of one particular manner of building, and bring it to its very simple perfection, only by the comparative isolation of their land and the extreme simplicity of their life.

We can never return to the old Greek dependence on the most elementary of all forms of building construction. We cannot get away from the fact that we know more than did the Greeks, in every department of human knowledge. We may not be wiser, but we know more, and we might attain to equal wisdom by study and understanding of what we know.

For the modern man, Greek is the beginning of architecture, and it is absurd to ask him to go back now to the beginning, to ignore all that has been achieved in the past 2,000 years. It is true that we must study the past; thus was produced Greek itself; from the study of Greek and Roman was evolved Byzantine, and from the latter Gothic—buildings which, in their time, were absolutely new and modern—but rooted deep in the past, for all that. They came into being by the application of past lessons to present needs and materials; they were the result of experimental design. What could we not produce by the critical study of past problems and their solutions, of the triumphs and failures of the past, with a concurrent study of engineering in steel and concrete—the study of our modern needs and modern materials? Have not all great arts and sciences developed along the lines of critical research, comparison, and experiment? What stimulus is there to equal that derived from the knowledge that one has mastered the secrets of the manipulation of the vast forces at one's disposal? What is more likely to lead the keen modern mind to fresh discoveries, to achievements worthy to rank with the great architectural inventions of the Romans, the Byzantines, and the Middle Ages?

The greatest legacy that the Greeks have left us is their recognition of the æsthetic element in construction, and since their days the great successes of architecture have been due to great engineering. The Romans were great architects entirely because they were great engineers; there is little of real beauty in their buildings, but they are supremely wonderful, and wonder is one of the elements of fine architecture. We wonder at Greek perfection and at Roman engineering, and at that combination of the two that we call Byzantine. The men of the Middle Ages were great architects, too, by virtue of their skill and daring in building; in the successful engineering of their materials.

*Extracts from a paper read at the Architectural Association. Camera, Sketch, and Debating Club, on March 14th.

It is most important to note that all of these great styles of architecture arose through continual *experiment*; therein lay their life. Renaissance itself was a living art so long as it remained true to experimental construction. Immediately it was assumed that this had reached its final stage, that the last word had been spoken, architecture then became academic, and merely a matter of adaptation. All life and joy departed from it.

In Greek and Roman, in Gothic and Byzantine, supreme art accompanied supreme construction. We shall see that this must be so, as the perfect craftsmanship and clear vision that are necessary to achieve greatness in art are the very qualities also necessary to achieve greatness in construction. All great architects have been great constructors right down to our own times. Perhaps our apparent unwillingness to recognise this fact, and appreciate its great significance, is due to the suggestion of platitude that there is about it. If it is platitude, however, it is because it is truth, and therefore precious, so few are the determinable truths of architectural ethics. To it is due the feeling that comes to us when contemplating the great monuments of the past, a feeling that they are inevitably what they are—that they took the shapes they did, not through the conscious caprice of their builders, but through the force of circumstances beyond their control. They were as much the product of their age and circumstance as were the feudal system, party politics, or the steam locomotive of theirs. It is from this feeling—that as they are so *must* they have been—that we derive the satisfaction and

contentment that is ours in their contemplation. We view with equal pleasure the Parthenon, the Pantheon, or Notre Dame, unless we are architectural bigots, and to these I may add the Forth Bridge and the Gare d'Orléans—classic instances by now.

In short, these great buildings are not merely beautiful—they are significant. They have a meaning and a beauty apart from the decorative forms in which they are clothed, forms in themselves accidental. It is this significance that raises them to the highest plane as artistic achievements.

It was by the arrangement of their essential constructive forms to secure the greatest convenience, economy, and strength that they obtained their splendid results—by what we understand as planning, and the adherence, in the design, to an *orderly* and logical arrangement of the constructive parts never departed from, and never allowed to become obscured by the ornament. Through it the buildings assumed their external beauty more or less unconsciously; certainly it was not deliberately regarded as the principal consideration.

It is here that the present Neo-Grec style fails completely, and can therefore never be regarded as being the best that we can do, and can never attain the same plane as the great architectures of the past.

External beauty is dependent upon many other things than mere form. Something that has been self-consciously designed, something that we feel to have arisen because its author considered it would look "nice" carried out in that

manner, we somehow are not completely satisfied with. In the case of a city hall or a parish church masquerading as a Greek temple, it is its insincerity that repels. As we cannot be Greek in our lives by wearing Greek dress and adopting Greek furniture, so we cannot have Greek architecture. It is *nothing* here; it has no meaning, and is neither Greek nor English.

Is architecture going to stand alone? Is our modern style to be the first of all to separate itself from the intellectual life of the age? Or are we going to be Neo-Grec in all our arts? An art that has anything in it should permeate the whole artistic life of the nation.

Art is thus reflected in all the life of ancient Greece, and in Roman, Gothic, and even Renaissance. Cannot we all identify the smallest thing dating from any of these periods? Are we to mount even higher on our pedestals, from which Mr. Burns, recently and quite justifiably, besought us to descend?

St. George's Hall, a unique building, was brought into being by a unique problem, and it, and other similar buildings, are no argument either for or against a general adoption of the style, any more than that other unique building, the new Liverpool Cathedral, is in itself a justification for the condemnation or universal adoption of Gothic.

The only real argument for the adoption of Greek would be that its forms could be arranged so as to obtain qualities otherwise impossible of achievement. Apart from the fact that argument of this character places architecture no higher than scene-painting or mural decoration, it is certainly not the case; it could not be so in an art such as architecture.



Photo: J. J. Schouten.

THE CATHEDRAL, HAARLEM, HOLLAND: VIEW FROM THE SOUTHEAST.



THE GREAT STATE MUSEUM, AMSTERDAM.

any more than in music. With the fundamental principles of design, and their application, as a basis for criticism, the same abstract qualities can be traced in any style of architecture, quite independent of the particular forms in which it may be clothed. But fine architecture has another set of principles to which it *must* adhere—fitness to purpose, climate, and other conditions peculiar to each country. With these as our guide, all that can be urged for Greek in England can be urged for any other style—it becomes merely a matter of personal predilection, and not of principles at all.

There is no more reason for using Greek than English Gothic; not as much, indeed, for the latter, which was many centuries in coming to perfection, is distinctly English, is suited to the climate, is supremely beautiful, and can be absolutely fitted to modern conditions. Any arguments against it are equally applicable to Greek, and many of those for it are not. I am not arguing that Gothic is *the* style for us, but to my mind if it can be made to meet modern requirements as well as the Greek, the argument that in it we have a carefully developed national style of our own is the one that turns the scale in its favour.

We may feel, from the study of Greek, that all other architecture is incompletely worked out; but why not work it out? Why not attempt something? Might we not find that we too had produced something worth while? Or are we just to take the easy road—to quiet our architectural conscience (there *is* such a thing), and steal and borrow our architectural forms; stifle our architectural intellect, and kill originality of thought? "There is no substitute for thought."

Every reference to the past should increase the mental labour of the enquirer, not serve as another modern labour-saving device, as it so generally does. He must endeavour to find out why each feature that he examines is as he finds it; discover its purpose, and determine its suitability both for that and the one that he proposes to put it to. By such methods it should be possible to build up a satisfactory philosophy or *order* of architectural design. By so doing we should arrive at a method of building beautifully that would be truly Greek in spirit—of which the plans and constructive forms would be absolutely modern, but nevertheless profoundly influenced by past achievements. In it we

might well find that many of the details were based on Greek forms, simply because certain features were so well studied by the Greeks, and brought by them to such perfection, that we are hardly likely to be able to improve them. Such a modern style would include not only the post-and-lintel system of building, which is all that the Greeks bequeathed to us, and which alone is far too small an equipment for our requirements, but also the round and pointed arch, the vault, and the dome. In it would be found no place for such incongruities as the circular pier sunk into a square one, or a colonnade standing a few inches only from the real wall of the building, carrying nothing but a balustrade and a few urns! Nor should we find a huge order, with its own entablature, surmounted by a low attic with a very much larger one, itself concealing a range of windows or merely forming a parapet wall, 10 ft. or more in height! Circular columns would be used only when detached, and only then when actually supporting something, under which circumstance alone do they find their true beauty. We may be certain that abundant opportunity would be found for the use of so lovely a feature.

Steel would come into its own, and its

possibilities be recognised—the qualities of the square wall pier be seen, and taken advantage of.

To me the most exasperating thing about these buildings of the latest Greek revival is the almost complete neglect of the splendid opportunities that await the truly modern architect. Can we do *nothing* with these? Must we fall back on engineers for our construction and the Romans for our clothing of it? Have we no wit or imagination?

It is the great fault of the average architect that he does not take advantage of his opportunities as an artist. That is, he does not set out to *create* something, but at the first opportunity harks back to what someone else has done. How can his art improve if he accepts the conclusion that the best has been done, that there is nothing left for him to do but adopt and adapt the ideas of other men? If I really thought this, I would never have become an architect. To be so hide-bound and fettered would be intolerable. We are not free to do as we like—far from it—but there is no need to so imprison our intellects. That is what seems to me most missing in modern English architecture—intellect—the mental grappling with and overcoming of our problems.

CHURCHES AT HAARLEM AND THE HAGUE.

These churches are notable examples of the work of Dr. Cuypers and his firm, whose name has so long been prominent in the annals of the Gothic Revival in Holland. The interior of St. James's Church at the Hague, though not ranking among the largest, is, in its forms and decoration, typical of the many parochial churches designed by Dr. Cuypers. The still incomplete Cathedral of Haarlem is the architect's most important church work, and one of the more recent. It shows something of an experimental quality, although to a large extent the Romanesque strain disappears in the interior, which is of an early and severe type of Gothic, yet not free from novelties. Like the generality of Dutch churches, ancient and modern, both these examples are built mainly of brick, as also is the great State Museum at Amsterdam, shown on this page.

W. R.



ST. JAMES'S CHURCH, THE HAGUE: GENERAL VIEW OF INTERIOR.

PLANNING ART MUSEUMS AND PICTURE GALLERIES.*

BY EDWIN T. HALL, F.R.I.B.A.

THE conception of museums in general is too wide for discussion here. Let us consider the main lines and general principles on which an art museum should be designed. First of all, its entrances and exits. It is not desirable to have more than one door (or group of adjacent doors) both for the ingress and egress of people in normal circumstances, so that all may be under observation by the same attendants. Fire-escape exits in a large building may be necessary, but these should be safeguarded. The common ingress and egress facilitates the placing of cloak-rooms. A spacious vestibule or hall will of course be necessary, and should be consonant with the dignity of the place.

Assuming a large building on more than one floor, the main staircase should be conveniently near the entrance, so that visitors to departments upstairs may at once be separated from those to the lower departments, thus reducing or disseminating the volume of people. I have seen designs where the main staircase is at the end, opposite to and far distant from the entrance, so that visitors who come especially to visit the upper floor have to pass through the lower, to their own inconvenience and that of those in contemplation of the ground-floor exhibits.

Details of Planning.

In a relatively small building a very usual plan is a rectangle with a central court, the staircase being in the centre or at the entrance, and this arrangement is commended by most authorities. At Cologne we get a central court, the stairs being right and left of the hall. In medium-sized buildings, such as at Münster, the Kunst Gewerbe at Berlin, and at Brunswick, we have an expansion of the same idea. The administration offices should, again, be placed in a position convenient for those who have merely business relations with the museum, so that these may not interfere with the art visitors. Such necessities as refreshment-rooms, etc., may be placed where convenient for general access, but it must be remembered that the supplies and staff should have access without having to pass through the galleries.

Top-lighted galleries may be placed in internal courts with rooms around them, or they may be on the top floor. The latter position is preferable for many reasons, one of which is that if the central gallery has a roof at the height of the surrounding building, this will be quite unsuitable for anything but sculpture or architecture; and if the roof be kept down the shadow from adjacent buildings will be objectionable.

Courtyards.

There is a widespread view among directors that there should be internal open courtyards to museums, and Dr. Gustaav E. Pazaurek, the director of the museum at Reichenberg, in 1903 said: "The internal courtyards of a museum should be laid out as gardens in which should be sculpture meant for outdoors." You will, of course, call to mind many sculpture gardens in Rome, Florence, and many other parts of Italy. In the Welsh National Museum at Cardiff, Messrs. Smith and Brewer have this feature with

a central fountain, and below the courtyard is an aquarium. They have also, in the external garden, an open pavilion for the display of national dances, for open-air concerts, etc., a feature highly to be commended. It is objected by some that our climate does not suit open courtyards for sculpture, etc., but the objection could be met by a plain glass roof with open sides, converting the courtyard into a covered garden. This courtyard feature is one to be encouraged and developed, and although we cannot have such large spaces as the Italian courts and gardens, or even the Grand Cour du Louvre at Paris, we could frequently have them of areas larger than the Octagon Court of the Vatican, which is but twenty metres across. In any case, these open courtyards enable excellent light to be obtained for lower galleries and basement rooms. The exigencies of the exhibits may require the windows of one room to be varied from those of its neighbour, or may demand, perhaps, a different architectural style for the window. This, in an internal area, can be done, but if the same were desired on the external facade of the building, it would be difficult to do it without damaging the architectural unity of the composition.

Sculpture Galleries.

This suggestion of sculpture in gardens brings us to the consideration of sculpture galleries themselves. There is considerable difference of opinion as to the best means of displaying sculpture. Some authorities favour large courts or galleries with plain glass roofs all over the area—in fact, the nearest approach to the open air; others say sculpture is best displayed by light coming from windows placed high up near the ceiling, the sculpture being placed near the opposite wall, so that light may come diagonally to it. There is much to be said for both views, but the open court view is more on all fours with the covered garden, and should be only for large groups such as Italians would put into their gardens. The latter view is more applicable for cabinet sculpture. If the area be large and the sculpture-groups well placed, the open top light is perhaps best on the whole. A well-known example is the Luxembourg Gallery, 130 ft. by 40 ft., which is top lighted for nearly its whole length. There, no marked light or shade is noticeable, except that in the central parts the vertical light is too great. If the area be small and in the nature of a long gallery there is danger of the shadows from brows, nose, ears, and chin being too much accentuated. All will call to mind the excellent light from high lunettes and windows in the Vatican corridors, and notably in the alcoves of the octagon court of the Belvedere. I think one of the finest architectural schemes for the display of sculpture is a wide colonnade (either straight or segmental on plan) at the ends of the central courtyard.

Alcoves.

Another important feature is to form alcoves in the gallery so that statues or groups may be isolated and attention concentrated. Of course, in considering sculpture galleries, regard must be had to the ready accessibility for heavy masses to be brought in from outside, and a basement road access is necessary for carts. Then important works and inferior works

must be separated, but the latter may be in near rooms for contrast or comparison. This is a point which has to be settled before an architect can mature a plan for sculpture galleries.

Laying out New Galleries.

We now come to the general disposition of other galleries in a museum. What is to be the principle on which they are to be laid out? Are galleries for all the different exhibits on a floor to be in one range; that is, to open into one another so that a visitor shall pass through all and make a circular tour back to his starting place? Are galleries to be in groups so that each group shall take one branch of art and illustrate it through all time? Should art work of all kinds of each period or era be illustrated together in the same room or gallery? For the convenience of administration and supervision only, the one continuous range is better. Large numbers of people are passing in only one direction, and do not interfere with those following them. On the other hand, if a visitor wants to contemplate one period of art—be it painting or any other manifestation—he has to make the other rooms mere passages.

In small museums or galleries the question we are considering settles itself. The floor area is limited, and the galleries on any one floor become a manageable unit which, if well arranged, meets with general acceptance. It would appear to be possible to apply this small unit principle to a museum of any dimensions, however large.

With respect to the ordinary galleries the general feeling in respect of all except picture galleries is that side-lighted rooms are best. Show cases having shelves will be better lighted from the side than from the top. In the former case the light passes between the shelves; in the latter one shelf casts a shadow on that beneath. For efficient lighting in our northern clime, cases should not be placed more than, say, 20 ft. to 25 ft. from a window. Windows in our climate should be kept as close to the ceiling as possible so as to get the highest possible angle of light, and in order to get the valuable reflected or diffused light from the ceiling surface. Show-cases should be placed with the long axis perpendicular to the window.

A good height for the window-sill of side-lighted rooms is 7 ft. 6 in. above the floor.

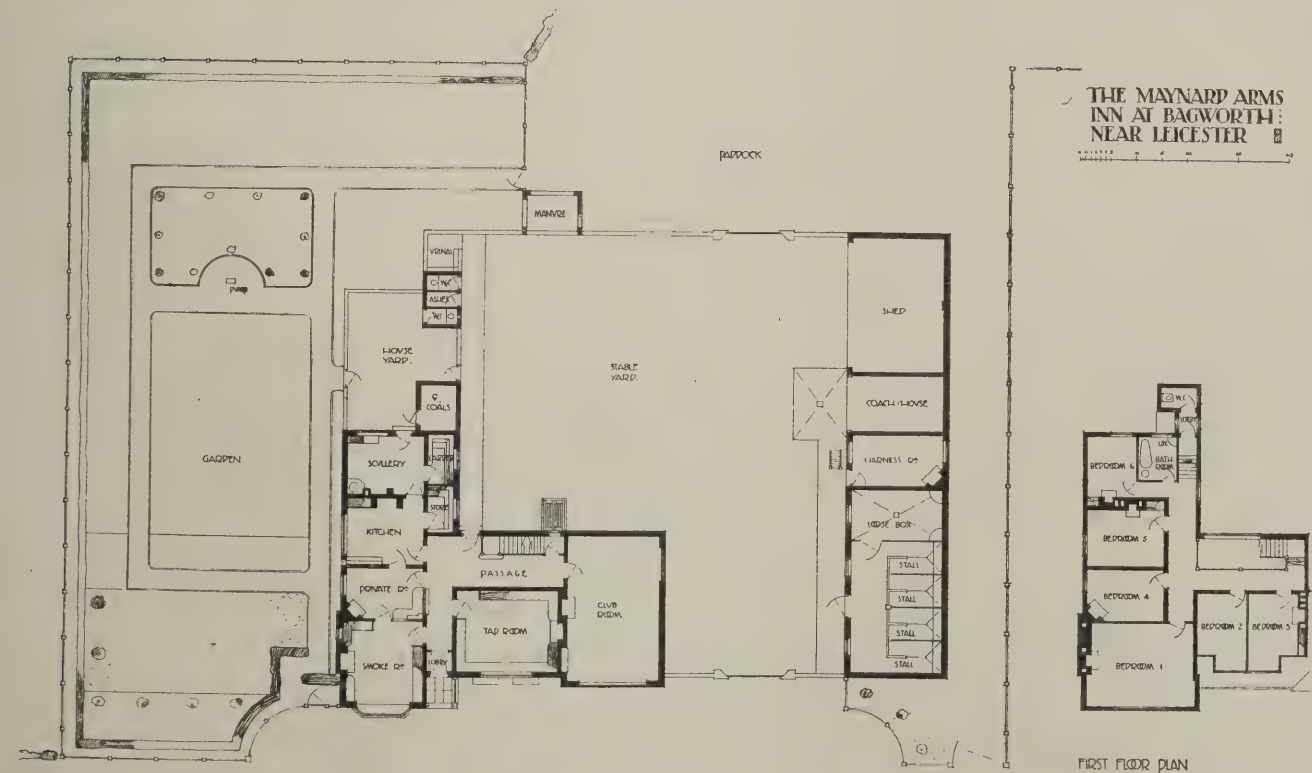
Colour of Walls.

As to the colour of walls there is a great difference of opinion. Nearly all agree that the background for pictures should be dark. I think it may be safely said that a background is successful in inverse proportion to its obtrusiveness. At the Royal Museum of old paintings at Brussels some backgrounds are of plush. some of velvet, the colours of different rooms being sage-green, Indian-red, and old-gold. In the Musée Moderne of the same city plush and cloth are used of Indian-red colour. In the new rooms of the London National Gallery the colours vary; some are green, some golden bronze, others red. Many artists favour red, but probably the colour scheme of every room in any permanent gallery can only be settled by adapting it to the pictures which are to be hung. One artist of great experience in hanging is of opinion that a bright background suits an Old Master better than it would a modern picture.

Reserve Galleries.

An important feature of a museum is the reserve galleries. They are not mere

*Extracts from a paper read before the Royal Institute of British Architects on April 1st.



THE MAYNARD ARMS HOTEL, BOGWORTH, LEICESTER, EVERARD, SON, AND PICK, ARCHITECTS.

This hotel is constructed with cement-faced brickwork, the roofs being of old Leicestershire Swithland slates.

warehouses or store-rooms. Some may be so used, and these should be near the goods entrance, but the main purpose, according to modern ideas, is that they shall be accessory to the exhibition galleries, and that from time to time the exhibits proper in the galleries shall be changed so as to keep up public interest. For this purpose the reserve galleries should be adjacent to the other galleries to facilitate ready exchange of objects. There should be students' research and copying rooms off each department, where students may be quiet. Each department should have for its keeper a room, well lighted and quiet, and convenient of access for visitors and students. This gentleman is an important official, an expert responsible for his department, a referee and lecturer, although I have seen designs in which the authors appear to have thought he was a porter.

The children's room is a modern adjunct, and it should be near the entrance.

A department should be set aside to illustrate by sketches, drawings, and models—in some cases actual size—the archaeology of the district, the demolished streets and old-world buildings.

Lecture Theatre.

Last of all the public rooms is a lecture theatre, and this should be so arranged that, while it is accessible from the museum, it may be separately entered from the outside so that it may be used when the museum is closed. It requires its separate cloak-rooms, lavatories, exits, etc. Its form depends on circumstances. In some cases its use may be restricted to lectures, in which case a semicircular form is convenient, with tiers of seats. In other cases it may be adapted for other uses as well, as, for example, for photographic or microscopic exhibitions, in which case it is better to make it rectangular with a level floor.

Last of a long series of slides, Mr. Hall showed the British Museum as it is proposed to be when completed. The old part was erected in 1855. The northern block of galleries is approaching completion, and it was seen that the ultimate extension will reach to Bedford Square on the west and to Montague Street on the east. The well-known reading-room is in the centre. The new galleries on the ground floor and first floors will be 48 ft. wide, lighted from both sides. Those on the top floor are skylighted. They are 19 ft. high to the base of the coves, and 30 ft. high to the lowest edge of the glass in skylight. This building, when finished, will, the lecturer said, form the noblest architectural monument of the Metropolis.

DISCUSSION.

Dr. Evans Hoyle, of the Welsh National Museum, proposing a vote of thanks, emphasised the necessity for the division of museum collections into two separate parts—namely, for the general public and for the student and specialist, for whom reserved galleries should be provided. With respect to pictures, no one background had been found to be better than another; backgrounds should be selected to suit the objects placed upon them. The speaker then referred at some length to the museum at Munich, which had been specially designed to contain a collection representing the art history of the city up to the middle of the nineteenth century. Every room was definitely constructed for the particular class of object it was to contain. To adopt this principle generally would of course

prove fatal. Its great disadvantage was that the museum was complete, and if it was desired to record any subsequent period a new museum would have to be built. At the National Museum of Wales, he continued, they had avoided the mistakes of their predecessors. For instance, the administration rooms had been put on the second floor. The director's room should not be too accessible to the public, and for obvious reasons it should be provided with two doors. With respect to lighting, for gallery pictures, the top-light was the most satisfactory if not too vertical. If a gallery were side-lighted, the walls that join with those containing the windows should be splayed and not at right-angles.

Sir W. Goscombe John, R.A., seconding the vote of thanks, said it seemed to him that the difficulty was to bring into line the interests of the dilettante person and those of the student. Referring to museums, he thought they should be kept as small as possible, otherwise, to avoid the distraction of a multiplicity of objects, one would have to be led with blinkers on to whatever one wanted to see.

Mr. Frank Dicksee, R.A., agreed with Mr. Hall that top-lighting was most satisfactory for picture galleries. With regard to backgrounds, if it were necessary to choose only one colour, he thought that grey was most desirable—at any rate for modern pictures. Architects, he thought, in designing picture galleries, concerned themselves more with the architecture than with making adequate provision for the exhibition of pictures, although this really was the purpose which the building had to serve. Galleries should not be too lofty; and pictures should be kept reasonably low on the wall. Mr. Dicksee concluded by criticising the hanging of the portraits of past-presidents of the Institute. The pictures, he said, were much too high.

Mr. William Woodward said it was curious that the architect, when designing a picture gallery, seemed to delight in making merely an architectural building, without any consideration for the purposes to which it had to be put. No reference had been made to the Tate Gallery, which, in his opinion, was one of the best-lighted galleries in Europe.

Mr. H. H. Statham said it appeared that the best method of lighting a gallery was by a lantern with vertical lights, the centre part being opaque. The Palais des Beaux-Arts was a good example, the quality of the light obtained being almost equal to daylight. This building was also admirable for the exhibition of sculpture, there being plenty of space for setting-out and ample room to get round the exhibits. Mr. Statham then suggested the roofing-over of the courtyard of the Royal Academy and the exhibition of the sculpture there. With regard to the hanging of pictures, to which a member of the Royal Academy had referred, he knew of painters who complained that at a certain place their pictures were hung too high.

Mr. Arthur T. Bolton protested against the planning of galleries in a series of small rooms. Before we allowed the specialist to run away with our public galleries, it should be pointed out that architectural effect was just as desirable as accommodation for students. He disagreed with Mr. Woodward; the Tate Gallery, he thought, was the worst-lighted gallery he knew. His personal

preference in the lighting of galleries was for flat glass roofs, of which he had recently seen a remarkably good example at Birmingham.

Mr. Matt Garbutt said that glazed pictures were often nothing more than a looking-glass. He suggested the placing of screens at the back of spectators.

Mr. Ernest Newton, who occupied the chair, in putting the vote of thanks, said that as architects they could only have one view—that fine art must be finely housed. Practical purposes must, of course, be considered; if a building failed in its practical objects it failed as a piece of architecture.

Mr. Edwin T. Hall then briefly replied. He could not assent to Mr. Garbutt's suggestion with reference to the provision of screens, which, he thought, would spoil the appearance of the room, as well as an obstruction to visitors.

LEGAL.

Builder's "Third Party" Liability.

In the Court of Appeal on Monday of last week, Lords Justices Vaughan Williams, Farwell, and Kennedy heard the application by the defendants in *Jackson v. London County Council and Chappell*, for judgment or a new trial in an action tried before Mr. Justice Bray and a common jury, in which plaintiff, who was a boy between 13 and 14 years of age, claimed to recover damages for personal injuries sustained owing to the alleged negligence of the defendants or their servants. Mr. Chappell was a builder and contractor, who was employed in January, 1911, by the London County Council to carry out certain repairs to a school in Middle Row, Kensal Road, London. On January 7th Mr. Chappell sent a truck containing the materials necessary to do the repairs to the school. The materials consisted mainly of rough stuff, composed of four parts of sand and one part of lime with a little hair. The truck and its contents were left, at the suggestion of the caretaker of the school, in the corner of the boys' playground. The school reopened on Monday, January 9th, and the headmaster of the school on his arrival noticed the truck and gave instructions to the caretaker to have it removed, as he considered it was dangerous, and the caretaker telephoned to Mr. Chappell asking him to remove it. He sent a man, who, however, did not do anything. At the close of the afternoon school, as the boys were leaving, the truck was tipped up and the contents emptied out, and some boys played a game of "snowball" with the rough stuff, making it into balls for that purpose. One of the boys threw a ball and hit the plaintiff in the eye, injuring the sight of the eye. The jury found £50 damages against both defendants, of which they apportioned £25 against each defendant. The defendants then appealed. The Court, without calling upon counsel for the plaintiff, dismissed the appeal, Lord Justice Vaughan Williams, in the course of his judgment, saying that the evidence had shown that the schoolmaster had recognised this barrow as a source of danger, while with regard to the contractor it was clear from the evidence that he was told to take some steps to remove the barrow, but that he had not acted sufficiently. In his judgment, this appeal failed and ought to be dismissed. Lords Justices Farwell and Kennedy agreed in the judgment of Lord Justice Vaughan Williams.

MR. DONN BARBER ON THE
ETHICS OF COMPETITIONS.

In America, as in this country, discussion of the competition question is perennial. From Mr. Barber's observations, which were delivered at the forty-fifth annual convention of the American Institute of Architects, it would appear that the practice of inviting competitive designs for private work is much more common in America than, happily, it is in this country, and that it is in the case of the private owner that the system is most gravely abused.

Competitions in one form or other, says Mr. Barber, are as old as the practice of architecture itself, and history teaches us that the resulting heart-burnings and disappointments, the strife and argument, the petty jealousies, the very important doubt as to whether after all the best man and the best plan have really won, obtained as much in the competition for St. Peter's at Rome as it has perhaps in our lesser competitions for a building of negligible importance.

It would be improper and unfair, indeed, to condemn competitions as a whole and indiscriminately, for from some points of view they seem to be a necessary evil. We can, I think, admit that competitions in themselves are not necessarily evil. The evil arises from the abuse and mismanagement of competitions, the unbusinesslike, undignified, inadvised, desperate sort of struggles that ever carry in their train disappointment, prejudice, criticism, and hard feelings of many and varied kinds. All this is responsible for a condition that has become a most serious consideration in contemplation of the inter-relation of architects, and bearing upon the actual work that we as a profession are doing and standing for. The architectural profession has for years been kept in a state of commotion, while the real solution of the difficulty seems as yet unfound.

It seems to have become a very generally accepted and recognised tradition in certain cases, notably where proposed structures of a public or semi-public nature are involved, that architectural competitions still prove to be desirable or necessary as furnishing, perhaps, the best available means for selecting an architect. Just at the present time in America, however, architectural competitions seem to be declining in popularity. Where only a comparatively few years ago competitions were sufficiently numerous to provide almost continuous employment for some firms who were fortunate enough to acquire the major part of their work in that manner, to-day we find an immense quantity of important work being given out by direct selection and appointment, and competitions comparatively infrequent. It would be difficult to assign any real reason for the change which seems just now to be taking place. Can it be that the owner is gradually coming to see that competitions are at best very slow, and, if properly conducted, are a most expensive method of choosing an architect? Is it possible that the owner realises that an occasional good preliminary scheme is, after all, the real limit of the competition method, and that being the case, competitions are in the main of no advantage to him? Does the owner begin to appreciate the extreme difficulty of devising a scheme of competition that will afford him conclusive assurance and evidence of the winner's ability to secure for him the final and practical execution of the design selected,

without committing him to unnecessary, if not inordinate, expense?

Notable instances exist where architects who have proved adepts in the preparation of competitive designs, men of extraordinarily developed imagination and possessing marvellous dexterity in draughtsmanship, have been awarded the prize, and later the work, as a result of competition, and have during the prosecution of the work shown themselves to be devoid of practical experience, and even lacking in the ability to discriminate in the selection of competent assistants or superintendents? The ultimate results in such cases have probably had the very, natural effect of somewhat impairing confidence in the competition method of selecting an architect. It is only fair to say, on the other hand, that there also exist many instances where notably satisfactory results have been obtained through the method of competition; but have these not ordinarily followed as a result of choosing the competitors from the ranks of competent and thoroughly experienced practitioners, and paying the competitors so selected an adequate or reasonable sum for their sketches? Exceptions to this latter rule might be noted in the cases of government and municipal work, and perhaps, possibly, in some private work of sufficient size and importance to induce the experienced architect to enter an unpaid contest; but even under such circumstances the competitors have usually been limited in number and carefully selected.

It must of necessity be prejudicial to the interests of the owner that any architect should be allowed to enter a competition who cannot in advance establish his ability and competence properly to design and satisfactorily execute the work involved. It is sometimes urged that to open an unlimited competition may disclose some unknown but brilliant designer. This reasoning might be valid if the sole object of a competition were to secure a brilliant set of sketches. But unfortunately sketches in themselves give no real evidence that their author has the technical knowledge or matured ability to fulfil the promise of his sketches through proper and adequate control of the work itself in execution.

The general influence of competitions can for present purposes be broadly divided as regards the influence on the architect. Theory presupposes competitions to be instituted with the sole purpose of advancing the interests of the owner, and practice proves that these interests are best served where a fair, clean-cut, and equitable agreement has been entered into between the owner and the architect before the competition takes place.

The American Institute of Architects, after years of untiring study and labour, has finally issued a circular of advice relative to the conduct of architectural competitions, as a statement of the principles which it believes should underlie such agreements. Serious difficulty with the system prescribed, however, has been found in some cases where it has proved inexpedient, not to say impossible, to carry on important competitions along the lines of what is conceded and believed to be the best practice, owing to the general and natural desire on the part of the owner to get free advice in the form of the greatest possible number of competition sketches, and also on account of the surprising willingness on the part of the architect to rush into competitions where no prearranged agreement or

understanding exists with the owner. The owner often regards what he believes to be the information contained and given in his particular competition in the light of a consensus of expert opinion on the subject of the problem before him, and therefore is pleased or disappointed, as the case may be, with what he regards to be the possibilities of his project. On account of the quality and character of the information so given, the real satisfactory solution of the problem is often complicated, and confusion rather than lucidity results. We have all seen the results of what have been termed "unregulated scrambles," and how many times this inconsistent, unbusinesslike, undignified, and certainly inartistic mode of procedure has carried with it its own disappointments, prejudices, and sins.

Why an owner, even when he has taste and judgment and is besides a good business man possessing ordinarily sound common sense, continues to persist in this method of obtaining a design for a building, is a question which architects must answer. It is certainly a most discouraging situation, looking at it entirely unselfishly and from a directly professional standpoint.

Architects are not paid enough for the work they actually do to be able to afford to waste their earnings on the whims and fancies of an owner who is willing to take without compensation from them, in one form or another, professional advice which may be the result of years of technical preparation and experience. The public should be made to feel that he who bears the title of architect has the knowledge and ability needed for the proper invention, illustration, and supervision of all building operations which may be entrusted to him, and that his services, when desired or sought, are entitled to commensurate remuneration. An architect should have a better standing in the community; he should be more prominent before the public and its public enterprises, in the courts and in all matters of good and helpful citizenship. To just how much of the lack of all this can we trace the influence and practice of unlimited and irregular competitions obtaining throughout the past is a question well worth considering.

The influence of competitions on the architect, aside from the undoubted educational advantage which they have furnished at unjustifiable and exorbitant expense to the profession, has been to create unreasonable jealousy and unfair prejudice, misunderstandings, disappointments, and in many cases undeserved criticism. It must be remembered in competitions that the resulting joy, if there is any, is of necessity confined to the winner, while the burden of disappointment is left to be shared by all the others who have competed through labour and expense. It has been proved over and over again, as an economic argument in the case of competitions for smaller buildings, that the unsuccessful competitors have often expended collectively in the cost of preparing competitive designs, a sum equal to, if not exceeding, the gross fee that the successful architect has finally received for his complete services rendered in connection with the execution of the work involved. This is, of course, a serious situation for the profession, and one which thus far has not been properly met or handled. It cannot be justified either as a good public policy or a sound professional policy. The query is, How long can the profession be expected to afford to continue the practice?



The ethics of competitions would seem to be inseparable from the ethics obtaining in the general practice of architecture. The written circular of advice relative to the principles of professional practice, the canons of ethics and the conduct of competitions as prepared and circulated by the American Institute of Architects, form a very complete and helpful basis for the avoidance of the usual pitfalls and temptations due to an over-anxiety to get work at any cost.

The application of decent methods in practice rests entirely with the individual practising architect, who, armed with these traditional principles and possessing a broad and comprehensive vision, not to speak of a healthy and sincere desire to apply in addition to all this the golden rule to all of his dealings, must look unselfishly at the part he must play as a unit force in the great work of the present, in order that his architectural progeny may occupy that undisputed place in the affairs of the world that should rightly be given to those who (we at least believe) represent the greatest of all constructive professions.

The American architect of the future must of necessity become less of a creative artist, and more of a trained manager of building enterprise. The ever-increasing pressure for speedy and adequate execution will preclude more and more exhaustive study and tentative experimentation. It will become the duty of the architect to surround himself by specialists in design, in construction, in superintendence, in technical research and engineering; men representing every department of architectural practice, and possessing a knowledge in their individual capacity, perhaps, far beyond his own. The architect himself must remain, however, the master mind that organises and directs those who strive for the common cause of the work in-



NEW GENERAL OFFICES FOR THE STEEL COMPANY OF SCOTLAND, LIMITED, BLOCHARN STEEL WORKS, GLASGOW. J. GAFF GILLESPIE, F.R.I.B.A., ARCHITECT (SALMON AND SON AND GILLESPIE).

The above building was completed at the commencement of this year, at a cost of between £6,000 and £7,000. The site was part of an old quarry, and on that account the building is founded on a reinforced concrete raft.

volved and for the office. He will deserve to exercise a greater moral influence in public affairs than heretofore; for the scope of his organised efforts will be nationwide, and his authority will be that of a broadly trained executive of varied experience, which coupled with a high sense of duty should make him a generous and true friend of public spirit and the eternal fitness of things.

BUILDING INTERESTS IN SOUTH AFRICA.

*Specially written by our South Africa
Correspondent.*

Johannesburg,
March 11th, 1912.

State of Trade.

The building trade generally in South Africa continues in a prosperous state, and it is gratifying to report that during the past year the coastal towns have been receiving a fair share of the construction work in the country. Previously it has been the custom to look upon the Transvaal, with its large Government contracts, as the focus of all building energy, but, as I have pointed out, it is a pleasing feature of trade that now it is being more distributed and that all parts are having a due proportion. I am able to quote a few figures which I have collected for the past year, and which have not yet been printed in any journal. I find that in 1911 the value of plans passed by the municipality of Johannesburg was £1,810,754, which is an increase of £470,000 on the figures of the previous year. Taking the coastal towns, the value of plans passed during the year by the Durban municipality was £224,197, as compared with £189,200 in 1910. Cape Town municipality passed plans to the value of £96,000; Port Elizabeth £44,000; and East London £46,000. In the inland colonies there appears to be also growing activity, for I find that Kimberley passed plans to the value of £68,000 in 1910, compared with £20,000 for the preceding year. In Bloemfontein, in the Orange Free State, the figures have risen from £9,215 in 1910 to £36,184 in the past year. The total amount of plans passed for the four provinces was £3,195,279, as follows: Transvaal, £2,571,611; Natal, £259,077; Cape Colony, £326,257; Orange Free State, £38,334.

Imports.

As regards the imports of building articles into this country during the twelve months of 1911, statistics show that these were valued for £2,735,013, compared with £2,734,809 in the preceding year. It will thus be seen that there is a steady import trade between Great Britain and this country. The largest importations are in cement, electrical fittings, plate glass, galvanised and corrugated iron, paints, wood of all kinds, such as flooring and ceiling, house frames and parts thereof, and zinc and zincware, which individually are represented by six figures.

The Federation Congress.

It is now about a year ago since the South African National Federation of Master Builders met at Bloemfontein, and the next Congress will be held at Port Elizabeth on April 15th. I understand that a large number of most important subjects affecting the building trade are to be deliberated upon. The subject of universal conditions of contract is one that will loom largely in the proceedings, as well as that of the con-

stant menace of coloured skilled labour, as it affects white labour in this country. Both of these subjects are of the utmost interest to all builders, and will receive their due meed of attention. Amongst other matters to be brought forward will be an Architects' Registration Bill. The points with regard to this have been raised by the quantity surveyors, and are supported by the executive of the National Federation. These are—that quantities, if they are to be referred to in the Architects' Registration Act, should be guaranteed; that they should be taken out by a duly qualified surveyor; and that it should be an offence under the Act if this is not carried out. The Federation, it is understood, will have its attention directed to the proposed Bill, and endeavour to assist in securing a clause in it which will give effect to the above.

Johannesburg New Town Hall.

The new town hall of Johannesburg will take about three years to build. The contractor is Mr. M. C. A. Meischke, whose tender was accepted for £293,938. The foundations have all been laid, and building was started on the 1st of this month. The site is on the Market Square, opposite the General Post Office.

Construction Work in Johannesburg.

One is much impressed with the amount of construction work just started in the central parts of the town near to Park Station. The new Young Men's Christian Association building at the corner of Joubert and Bree Streets is being erected, and opposite that the ground is being cleared away for a magnificent building to be erected for the Union Club. Not far from this a very handsome building of offices and residential chambers is being erected for the African City Properties Trust, Ltd., while in the same neighbourhood the New Lyceum Theatre is in course of construction. Messrs. Chudleigh Bros.' building, which will cost, when completed, some £80,000, is also in course of erection in Eloff Street, and is a grand structure from every point of view. Such huge buildings as these, and also the one recently completed for Messrs. Anstey and Co. in Kerk Street, go to prove the great amount of confidence that merchants have in the stability and future of Johannesburg. All the buildings I have mentioned are within a short distance of each other, and the tendency seems to be towards this becoming the real mercantile centre of the city.

Building in Pretoria.

The new Union Government Building in Pretoria is making rapid progress, and one is already beginning to notice how much architectural effect and character it will exhibit when the plans are fully carried out. Situated on Meintjes Kop, the building will rest mainly on a rock, the strata running in the opposite direction to the slope of the hill. The building is designed to meet the needs of the southern climate, and it is interesting to note that the buildings are constructed as far as possible by local material and local labour. The architect is Mr. Herbert Baker, F.R.I.B.A., and the work is being carried out under the supervision of the Public Works Department. The contractor for the eastern and western blocks is Mr. M. C. A. Meischke, the contract amount being £622,500. For the amphitheatre block, which will cost £256,224, Messrs. Prentice and Mackie are the contractors. The total outlay for the blocks is £878,724.

CORRESPONDENCE.

Cheap Cottages.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—“I licentiate R.I.B.A.” in your issue of March 27th, evidently has a limited knowledge of the practical ability of the type of artisan who is usually called upon to erect a simple country cottage, if your correspondent thinks that a farm labourer can be employed as his substitute. Roadmaking, farming, thatching, and well-sinking are the daily work of agriculture; but tiling done by farm labourers means leaky roofs, to say nothing of deplorable appearance.

The writer's experience of country contracts has been that local men are only fit for rough excavating or carting. Their intelligence is limited or latent; and builders find it more economical to employ experienced builders' labourers and pay them higher wages than the local rates. It follows, therefore, that if the country labourer is unfit as a general builder's labourer, he can hardly be expected to do the work of a skilled artisan.

Respecting monastic building, it is no doubt true that in the Middle Ages the brothers did some skilled work; but in the modern monastery a Catholic layman is employed to superintend the work and to engage skilled operatives for carrying it out.

CLERK OF WORKS.

DETAILS, OLD & NEW, XXXIX.

Collin's Hospital, Nottingham.

Collin's Hospital, Nottingham is a most interesting example of early eighteenth-century work, though the name of the architect is not known. All the essential particulars of the materials and construction are given on the drawings reproduced on the following pages. To the inscription over the north entrance, given on the Centre Plate, it may be added that the hospital was founded originally for the reception of 24 poor men and women, each of whom was provided with two comfortable apartments, and 2s. per week, with a ton and a half of coals per annum. The general dimensions of this entrance correspond with those of the south entrance, of which complete details are given on pages 381 and 384. The doorway in its relation to the whole front is shown by the north elevation on page 382.

“The Year's Art.”

As a faithful record of the year's happenings in the art world, this annual is always interesting, and its value in this respect is greatly enhanced by the inclusion of many full-page plates illustrating subjects which in various ways assumed topical interest during the period covered. The editor's review of “The Past Year” is exceedingly well done, although a disproportionate amount of space is given up to a rather dithyrambic lament on the theft of the “Monna Lisa” from the Louvre. “As the years go by the horror of the loss will increase. . . . It is a world-tragedy,” and so forth. All the more noteworthy institutions in any way connected with art are succinctly described, architecture being of course included, and there are lists of fine-art dealers, as well as a directory of artists and art workers. The publishers are Messrs. Hutchinson and Co., 34, Paternoster Row, E.C., and the price 5s. net.

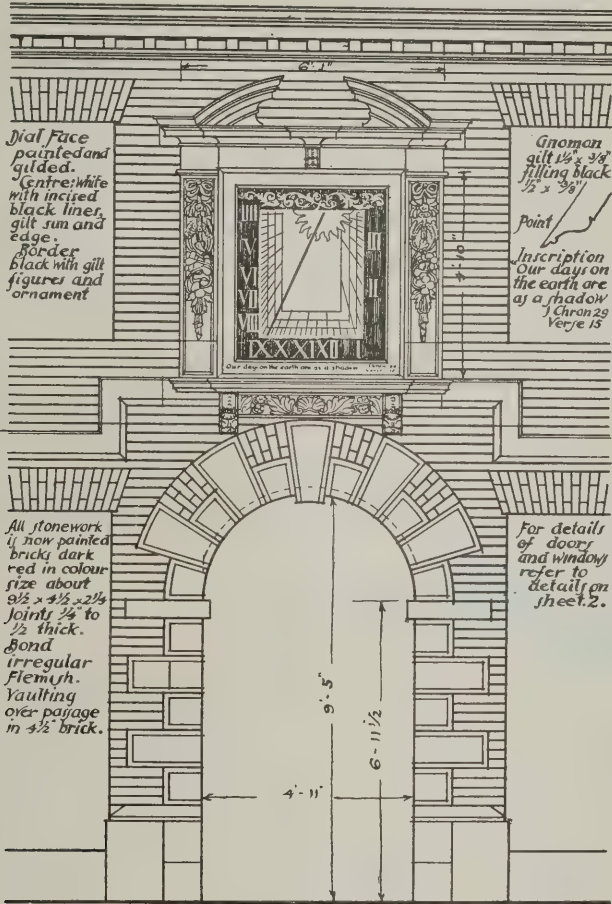


North Entrance.

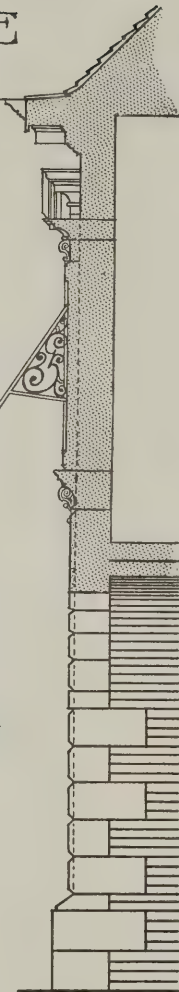


South Entrance.

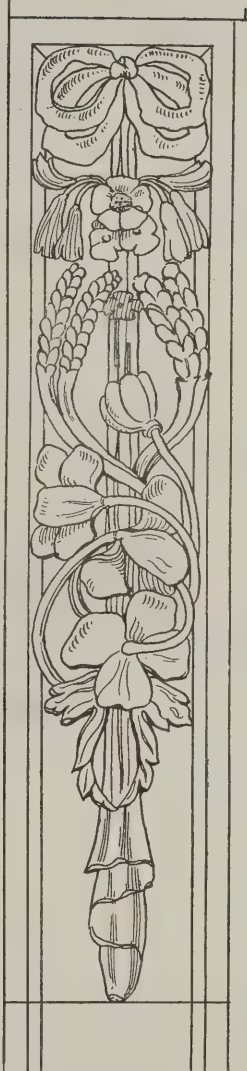
COLLINS HOSPITAL NOTTINGHAM DETAILS OF SOUTH ENTRANCE



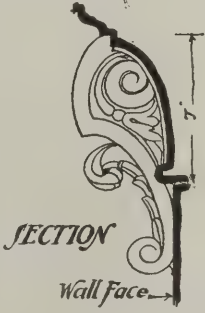
ELEVATION

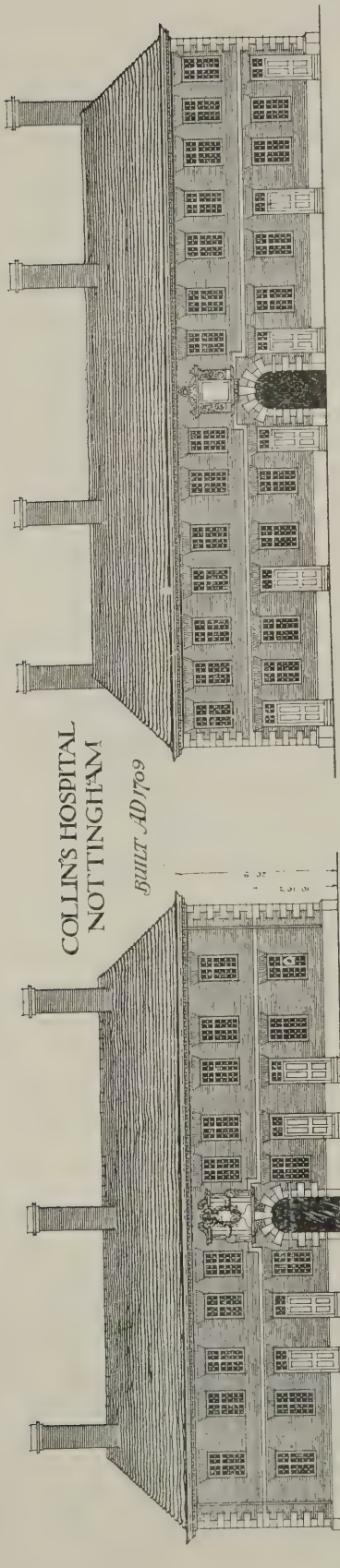


SECTION



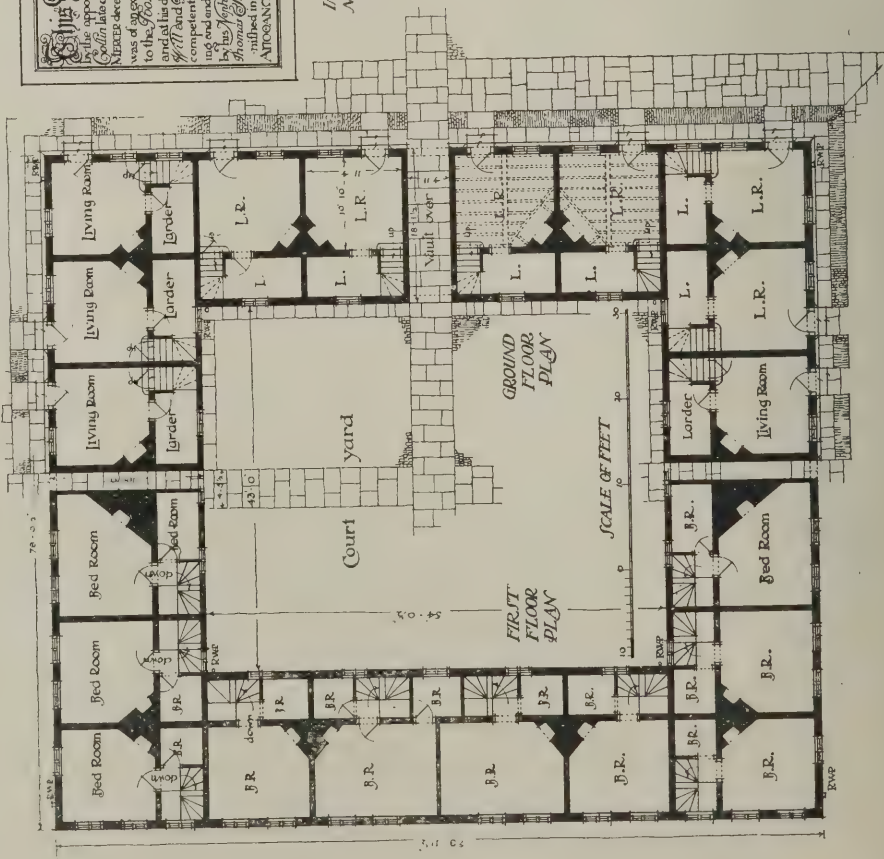
INCHES 1 2 3 4 5 6 7 8 9 10 FEET





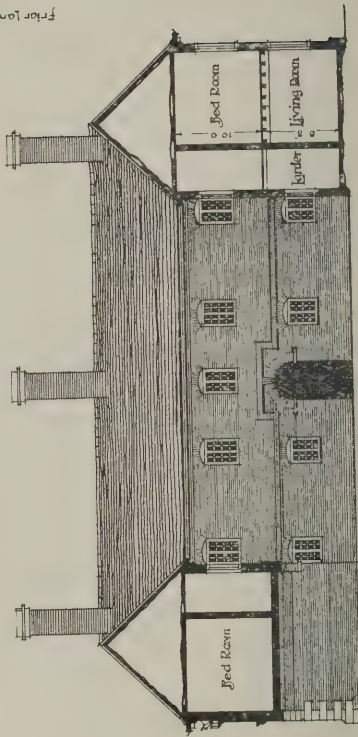
EAST ELEVATION

NORTH ELEVATION



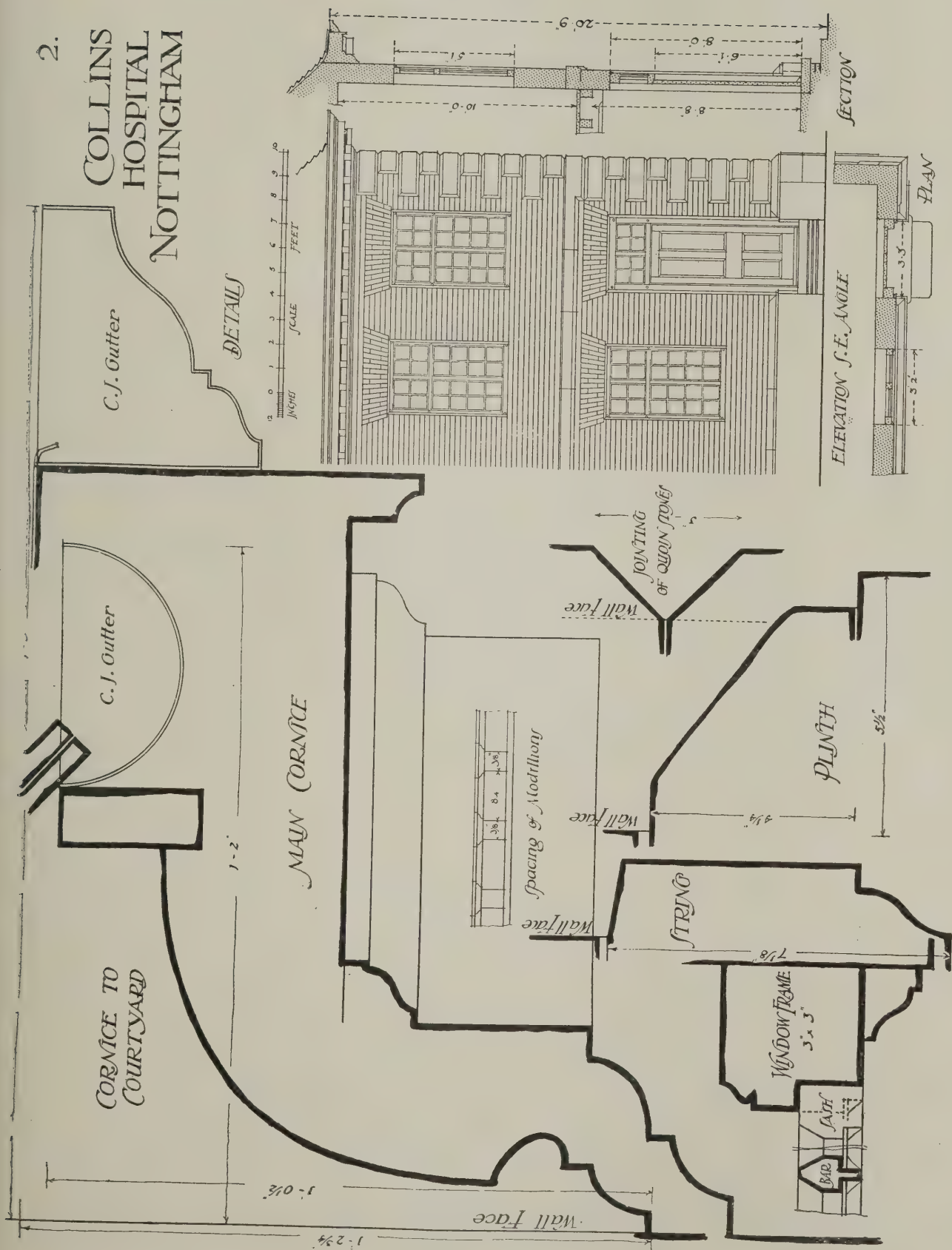
Collin's Hospital
This Hospital was founded by William Collin, Esq. in the year 1709, and was at first a small building, but has since been enlarged and improved, and is now a most comfortable and convenient place for the reception of the poor and infirm. It was founded by the will of the late William Collin, Esq. who died in the year 1709, and was at first a small building, but has since been enlarged and improved, and is now a most comfortable and convenient place for the reception of the poor and infirm.

INSCRIPTION OVER NORTH ENTRANCE

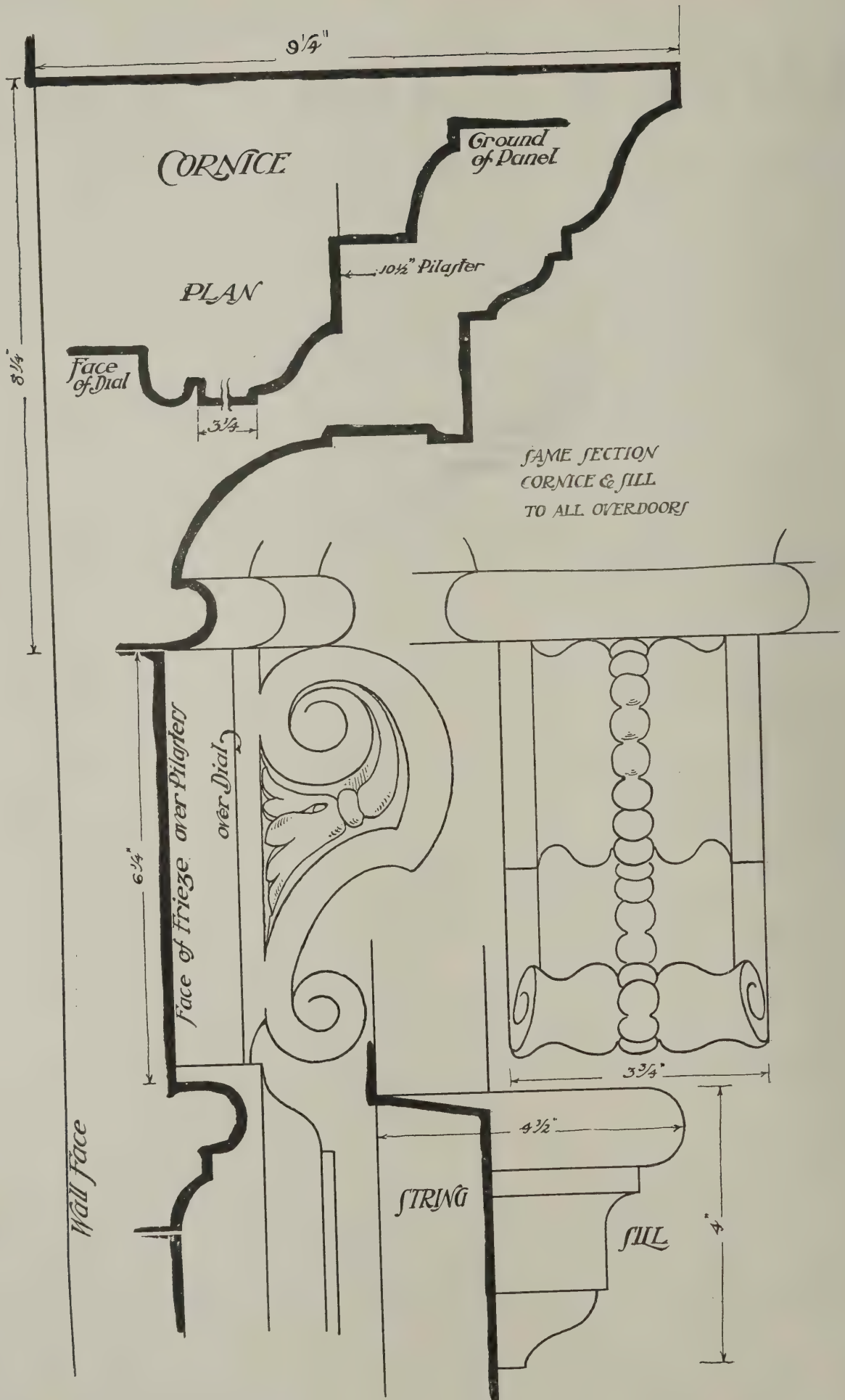


SECTION & EAST SIDE OF COLLEGE

Measured and drawn by W.B. Colthup



MEASURED AND DRAWN BY W. B. COLTHURST.



DETAILS OF SOUTH ENTRANCE TO COLLIN'S HOSPITAL, NOTTINGHAM.

MEASURED AND DRAWN BY W. B. COLTHURST.

PHENIX FIRE INSURANCE
OFFICES, LEEDS.

This building occupies an excellent site in South Parade, Leeds, formerly in the possession of the Young Men's Christian Association, who have recently erected new premises in Albion Place. The Phoenix offices are faced with dressed stone from the Cullingworth quarries, and are roofed with Tilberthwaite slates. The staircase and floors generally are of fireproof construction. The rooms occupied by the Phoenix Company comprise a large general office 28 ft. by 23 ft. and separate offices for the manager and typewriters. The remainder of the building is devoted to suites of offices let off to various tenants. Messrs. Henry Atkinson and Sons were the contractors for the masons' and bricklayers' and carpenters' and joiners' work; Mr. William H. Thorp, F.R.I.B.A., of Phoenix Chambers, Leeds, was the architect, and Mr. William H. Tarran, of Fulford, York, the clerk of works.

FIRE PREVENTION NOTES.

The effect of climatic conditions on fires is rather strikingly shown in a tabulated record

*A Month's
Five Losses.*

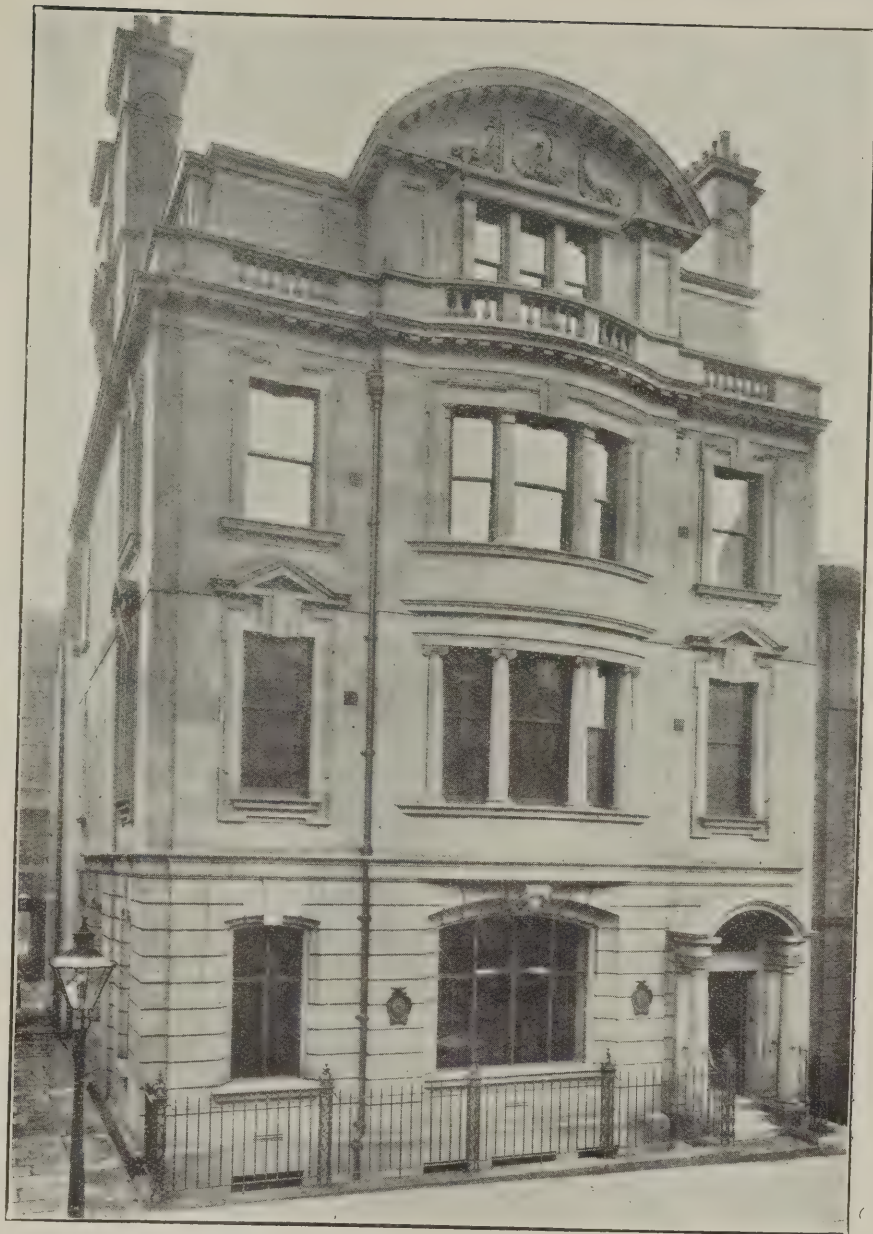
which has been published of the principal fires that occurred in the United Kingdom during last March. The fires were comparatively few because March was a wet month, and because there were no extremes of cold to cause the overheating of buildings. The list shows that the total estimated loss for the month amounted to £123,200, which compares somewhat strikingly with £250,900 in March, 1911, and with £244,600 in February of the present year. These figures, however, all exclude fires in which damage to a less amount than £1,000 was claimed for in the insurance offices; and it must not be forgotten that such claims, being very numerous, amount in the aggregate to a very substantial sum, revealing still more strongly the need for precautions against fire in buildings other than the large factories, and so forth, comprised in the list, in which there is only one "private house," unless the "mansion" may be taken to be the same thing under another name. At the former, damage was done to the extent of £2,000; at the latter, to the extent of £2,500. The other buildings may be roughly described as factories of various kinds, although the three timber yards are hardly within that category. In two of these yards the losses are returned at £8,000 each, and this is the highest figure recorded, with the exception of the sweet-factory fire at Newport on March 30th, in which the loss is estimated at £15,000.

Sir William Ramsay's suggestion (after luncheon) at the opening of the Smoke Abate-

*A White
World.*

ment Exhibition, that coal-mines might be worked more economically by sending up the product in the form of gas, has set people wondering why so simple and so obvious a remedy for strikes had not been adopted years ago. Just as deposits of salt are worked, not by mining the salt, but by pumping-in water which is recovered as brine, so, thinks Sir William, "it would be ideal," instead of mining coal, to have retorts in the bowels of the earth for the production of gas. The gas might be used in gas-engines at the pit-mouth for the pro-

duction of electricity, which might be distributed by high-tension currents to any desired point. By this means it might be possible to produce electricity, to be used for heating, at a price of perhaps one-hundredth of a penny per unit. Coming from a man of science of Sir William Ramsay's eminence, the suggestion is not to be lightly disregarded; yet, to the lay mind, the making of gas in a coal-mine seems to be fraught with the most appalling possibilities of catastrophe. So also does the extreme cheapening of the cost of electric current, whether by this or by any other means. The general use of high-tension current—which seems to be pretty confidently predicted by many others besides Sir William—will, or ought to be, accompanied or preceded by a drastic revision of many of the details of building construction, with very particular reference to the problems of fire-prevention. In suggesting that the realisation of his suggestion would probably abolish miners' strikes, Sir William—no doubt from motives of delicacy—refrained from mentioning that inferentially it would also abolish smoke-abatement exhibitions; which might perhaps be superseded by fire-prevention exhibitions.



PHENIX FIRE INSURANCE OFFICES, SOUTH PARADE, LEEDS.
WILLIAM H. THORP, F.R.I.B.A., ARCHITECT.

*Cost of London
Fire Stations.* The economically minded ratepayer will be reassured to hear that the capital esti-

mates for a number of proposals relating to the L.C.C. fire brigade exceed the cost of the works or the actual price of the acquisition, as shown in the following list:—Brixton fire station—acquisition of site and erection of building: reduction by £8 14s. 9d. to £11,871 5s. 3d. Cannon Street fire station—acquisition of site and erection of building: reduction by £2,033 3s. 1d. to £60,416 16s. 11d. Waterloo Road fire station—acquisition of property: reduction by £2,980 18s. 7d. to £5,519 1s. 5d. Tooting fire station—erection of building: reduction by £1,141 4s. 7d. to £12,272 13s. 6d. Vauxhall fire station—conversion into a full station: reduction by £650 to £1,850. The aggregate of the approved estimates was £98,743 18s. 4d., and that of the reduced estimates is £91,929 17s. 4d., so that the total extent of the reductions is £6,814 1s. The working drawings and the draft specification for the new fire station to be erected on the site of the existing Hackney station and of No. 2, Bodney Road, Hackney, have been prepared, and quantities are to be taken.



PHOENIX FIRE INSURANCE OFFICES, LEEDS. WILLIAM H. THORP, F.R.I.B.A.,
ARCHITECT.

out and lithographed at an estimated cost of £200, which will be charged against the capital estimate of £14,500.

Five Brigade Competitions.

Our observations, in a recent issue, on the benefits accruing from the encouragement of fire-brigade competitions have had a gratifying sequel. In the report of the Fire Brigade Committee of the London County Council printed in last week's agenda, it is announced that, in order to encourage smartness and to promote increased efficiency among the members of the fire brigade who man the horsed escapes and motor escapes, it is proposed that an annual competition shall be held between the staffs of the various stations throughout the brigade. It is suggested that preliminary tests shall be held in each of the six brigade districts, and that the final test shall be held at the chief station between the best teams in each district. It is further proposed that, in order to increase the interest taken by members of the brigade in the competition, money prizes should be awarded, and that these should be as follows: To each member of the teams securing the first, second, and third places in each of the six brigade districts, 15s., 10s., and 5s. respectively; and to each member of the winning team in the final competition, £1. Each team will consist of four men. In these proposals there is nothing to indicate that the public will be afforded an opportunity of witnessing the competitions. For two reasons, this seems to be rather a pity—the presence of the public would afford an added stimulus to the competitors; and the public would benefit by increased interest in the brigade and in the general subject of fire-fighting. The more the public can be induced to turn their attention to such matters in their broad aspect, the greater will be the proportion who may be expected to give due regard to details of fire-prevention as well as to those of fire-suppression.

HASLAM PARK, PRESTON.

The Preston Town Council have under consideration Mr. T. H. Mawson's scheme for the laying out of Haslam Park, at Preston. The total estimate for the landscape construction, and planting amounts to £10,647. The total park area is 273.333 sq. yds., or 56½ acres.

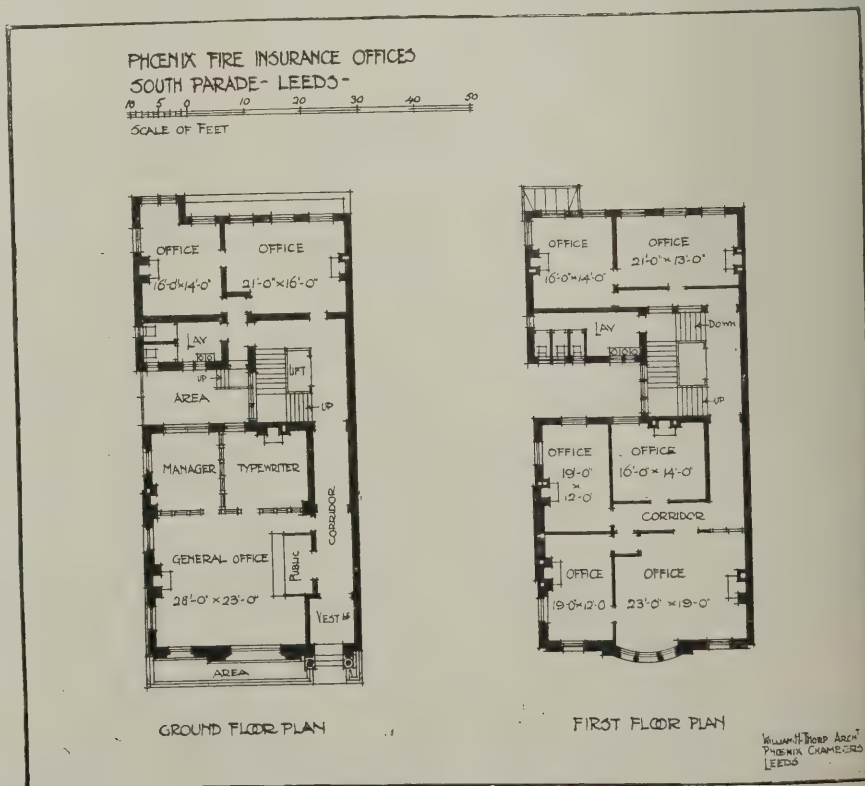
The detailed figures prepared by Mr. Mawson show that the idea of a recreational park has not been lost sight of, but there is, nevertheless, an attempt to give quiet retreats wherein to foster interests which shall appeal to the aged and lovers of nature.

More than 22,000 sq. yds. are to be utilised for a lake. "An exceptional opportunity," Mr. Mawson reports, "is provided by the stream that runs through the park, which, even during the phenomenally dry summer we have experienced, has given a constant supply of fairly clean water, sufficient to form a boating pond of considerable extent. The levels of the ground, the fall of the stream from end to end, and also the nature of the soil and subsoil, make such a lake a sound proposal, which, by the hire of boats, would probably earn interest on the outlay, or at least provide a considerable sum annually towards maintenance."

On the playing field side of the main avenue—which it is proposed to plant with a double line of limes, as in Moor Park—it is recommended that there should be erected—about equidistant between the two entrances—a shelter pavilion, simply but none the less architecturally treated, and provided with good dressing rooms and conveniences.

The avenue and playing fields are parts of the original scheme which have been retained, but much of the remainder is either opposed in principle to, or additional to, the old plan. "The most important deviation is the provision of a new roadway wide enough to be used on occasion by vehicles. Entering the park at the south-east corner, it extends by flat curves to a point opposite Bostock's Farm, crossing the lake in its course by two bridges, which it is suggested might be of a simple trestle design. The position of the south-east entrance and the drive immediately within the park gives an excellent axial line, on each side of which are arranged the children's playground, bowling greens, bandstand, and tennis lawns. There is also, on the east side of the first bend, a space large enough for an excellent hockey ground. This arrangement allows of economical working and control.

The designer has issued, with his report, a design for the lay-out of the park, which shows very graphically the woodland effects that are contemplated



IN PARLIAMENT.

ECONOMY OF GAS POWER.

(By our Press-Gallery Representative.)

Lighting of the House of Commons.

Mr. Wedgwood Benn, on behalf of the First Commissioner of Works, has stated that it is proposed, if found desirable after experimenting, to substitute electric lighting for gas in the debating chamber of the House of Commons. This, he said, would probably be more efficient, and would certainly reduce the cost of lighting. It was intended to carry out the work in sections in order to give members an opportunity of observing the effect of the change.

Mr. Bowerman suggested that the lighting of the Terrace should be improved. Mr. Benn said there was no provision on the Estimates for that, but the First Commissioner would be glad to consider the suggestion when preparing the estimates for next year.

Mr. Ormsby Gore wished an opportunity for the House to discuss the lighting arrangements, and suggested that, in the opinion of leading oculists, gas light was less harmful than electric light. He also asked whether gas assisted in the proper ventilation of the House. Mr. Benn replied that an opportunity would arise for discussion on the vote for the Houses of Parliament. The First Commissioner was not aware that leading oculists had expressed any such opinion in regard to lights placed as the lights in the House of Commons would be. Gas did not assist in the ventilation of the House, and under the proposed arrangements the House would be better ventilated than heretofore. Mr. Mildmay desired to know if the alterations would include some alteration in the methods by which cold air was pumped up from under the seats. Mr. Benn said it was not contemplated to alter the form of ventilation.

The Building Line in Edinburgh.

Mr. Hogge asked the Secretary of Scotland whether his attention had been drawn to the fact that the Government proposed to erect a new building in Inverleith Row, Edinburgh, on a frontage line which did not comply with a local by-law prohibiting the erection of any new building within a distance of 30 ft. from the centre of the street, and if he would give an undertaking that the proposed building would not be proceeded with. Mr. Benn, who replied, said the question was at present *sub judice*, and in the circumstances he was unable to give the undertaking desired. He further stated that an appeal was being taken against the decision obtained in the courts against the Government.

Government Offices in Dublin.

Questions having arisen in the House of Commons as to the provision of new offices in Dublin for the various branches of administration, and the necessity for proceeding with the new buildings in Upper Merion Street, Mr. Masterman, Secretary to the Treasury, explained that the only cost estimated in connection with the unfinished part of that scheme was that of the architects' plans—something like £2,000. There was considerable doubt whether the buildings as originally planned would be proceeded with in view of the changes which might take place in future. Several Irish members suggested that the work should be put in hand at once in view of the fact that money was being spent in Dublin for the relief of distress.

In a lecture before the Society of Engineers and Metallurgists on the economy of gas power over steam, Mr. Alan Chorlton, of Messrs. Mather and Platt, Ltd., Manchester, claimed that so completely satisfactory and reliable had the gas engine now become that every day saw its application extended to duties so difficult and onerous that only a few years ago they would have been thought impossible of achievement. The invention of the producer, its progress and improvement to date, had, of course, extended the field of the gas engine enormously. Mechanical and thermal efficiencies had steadily increased in recent years, and the reliability of the gas engine had been brought up to the standard of the one-time omnipotent steam engine. A waste gas that was at present receiving more attention even than that from blast-furnaces was that which was obtained from the by-product coke ovens. These ovens were now at work or being laid down in considerable numbers in this country, but even in this matter we were far behind the expansion that was taking place in Germany. Such was this expansion that, with the typical German ability of working together, the coke-oven owners were now selling large quantities of waste gas from these ovens for illuminating purposes in the adjacent towns. In this country the only place where such illumination was carried out was Little Hulton.

Mr. Chorlton predicted that when further progress of this nature took place in districts adjacent to coalfields, it would last of all affect Sheffield, which already compared favourably in the price of gas supplied retail (11d.) with that supplied in gross by the German concerns (8½d.).

TRADE AND CRAFT.

Carron Interior Grates.

The Carron Company, of Carron, Stirlingshire, and Phoenix Foundry, Sheffield, have issued a handsomely illustrated list of their new series of segmental interiors, the designs for which they are confident will specially appeal to the taste of architects. Whilst simplicity is the dominant note in these designs, the fourteen varieties shown admit of wide diversity in taste and circumstance; material, pattern, and finish giving a considerable range of choice. Many of these interiors are perfectly plain; but in those in which decoration has been introduced it is always chaste and dignified.

A New Joinery Catalogue.

Messrs. C. Jennings and Co., Earl's Mead Joinery Works, Pennywell Road, Bristol, have issued a 264-page catalogue containing prices for nearly every article of woodwork in use; the firm claiming to produce doors, windows, joinery, and mouldings of every description, of good quality, at competitive prices. The woodwork illustrated ranges from simple cottage doors to elaborate work in best Austrian oak, teak, mahogany, and other high-class woods; and a special feature of the list is a set of designs—some elaborate and others inexpensive—of fretwork for arches, vestibules, etc., showing clearly the excellent effects which can be obtained at small cost with this class of work. The book is obtainable in exchange for professional or trade card and 5d. in stamps.

A New Metal Filament Lamp.

In a booklet that has just been issued by the British Thomson-Houston Co., Ltd., Mazda House, 77, Upper Thames Street, E.C., the announcement is made that those users of the electric light who have continued to employ the old-fashioned carbon lamp because they consider metal filament lamps too expensive need no longer take this factor into account. The new B.T.H. Gem lamp costs only 2d. to 2½d. more than the ordinary carbon lamp, is British-made, and can be obtained in two efficiencies—2½ watts per candle, and 2.8 watts per candle. Gem lamps, for which it is claimed that, while giving a light of superior brilliancy, they effect a 25 per cent. economy in the consumption of current, saving the consumer 6s. 4d. in every 1,000 hours of service where the price per unit is 4d., or 7s. 11d. where it is 5d., are made for voltages of from 100 to 130 volts, but can be ordered and used in series on 200 to 250-volt circuits. The Gem lamp, with its improved "metalised" or "graphitised" carbon filament, represents, it is claimed, the most important development in carbon lamp manufacture that has taken place in recent years, the gain in efficiency being obtained without any sacrifice of service results. The 2.8 watt lamp has an average life of 1,500 hours, the 2.5-watt lasting 800 hours—in each case with well-maintained efficiency.

MIDDLESEX HOSPITAL EXTENSION.

Her Majesty the Queen, on March 27th, opened the Barnato-Joel Cancer section of the Middlesex Hospital, of which the foundation-stone was laid in July, 1910. Mr. E. T. Hall, the architect; Mr. James S. Holliday, the builder; and Mr. A. M. Coombs, the consulting electrical engineer, were among those who had the honour of being presented to her Majesty by Prince Alexander of Teck. The key with which the opening ceremony was performed was designed by Mr. E. T. Hall and executed by the Goldsmiths and Silversmiths' Company.

The extensions are built to the west of the hospital, to which they are connected by corridors, subways, and a garden approach. They comprise forty-three beds for patients, a home for fifty-nine nurses, bedrooms for twenty servants, an out-patients' department, an entirely new research department, an operating theatre, and an apartment for electrical treatment.

The new buildings are English Renaissance in style, that facing the street being externally of red brick and Portland stone, the others being of white brick and similar stone. All the floors and flat roofs and partitions are of fire-resisting construction. On the first floor of the Nassau Street building, which is five storeys high, there is a ward of 20 beds. On the wall of this landing, by the entrance to the ward, is a specially designed bronze tablet denoting that this is the "Queen Mary" Ward. Over the fireplace at the south end is a portrait of her Majesty presented by the architect. The second floor contains similar accommodation, the ward being dedicated to the late Prince Francis of Teck, of whom there is a portrait. In this ward, with the exception of two wards and day rooms, the old Cancer Charity has been remodelled throughout, and another storey has been added to both wings. The eastern block is six storeys in height.

NEWS ITEMS.

The London Labour Movement.

As already reported, the several sections of workers in the London building trade are asking for a common rise of 1½d. per hour, and this demand is being considered by a special committee appointed by the council of the London Master Builders' Association. Although it is hardly likely that the full demand will be conceded, a Press representative who made inquiries among officials on both sides last week learned that the possibility of a strike is regarded as being rather remote. There has been no alteration in the rate of wages paid in the building trade since 1900, when the carpenters and masons obtained an advance of ½d. per hour.

Ancient Monuments Protection Bill.

This Bill, which was introduced by Lord Southwark in the House of Lords on March 14th, acts upon the report of the Royal Commission on Ancient Monuments that valuable monuments are being lost and urgently need preservation. By the Ancient Monuments Protection Acts, 1882 to 1900, an owner of a monument may in certain conditions obtain the guardianship of the Commission of Works for a monument. The present Bill gives power to the Commission of Works, with the advice of an advisory board, to secure that historic monuments shall be preserved from destruction and decay. The great majority of owners already preserve such buildings. These will be unaffected by the Bill.

Preserving Oxford's Old Houses.

A sub-committee of the Oxford Architectural and Historical Society has been formed with the object of preserving the old houses at Oxford. They propose "first to schedule all existing houses and other antiquities that possess special architectural or historical value; (2) in the event of any buildings, etc., on this list being threatened with demolition or restoration, to do all that is possible to preserve them; and (3) to make, catalogue, or collect pictorial and descriptive records of houses, etc., in the schedule, and also of those of similar character that have disappeared."

The Shakespeare's England Exhibition.

The buildings for the exhibition to be called "Shakespeare's England" are now being erected at Earl's Court. These are formed largely of a fireproof composition which can be made to look exactly like stone or brick or wood as may be desired. Innumerable architectural details are being moulded on the spot and built into place on plans drawn largely from Messrs. Garner and Stratton's and Mr. Gotch's volumes, together with the Architectural Association's sketch-books. The exhibition is to open on May 9th.

Shakespeare National Theatre.

In May, 1911, the London County Council granted to the Shakespeare Memorial Committee an option terminable at the expiration of one year from April 1st, 1911, to purchase, subject to any necessary consents of the Local Government Board, and of lessors of any of the property affected, and on terms to be hereafter determined by the Council, the Council's interests in the county hall site upon the vacation of the premises. The committee have asked that this option may be extended for a further period of one year, and the General

Purposes Committee have recommended that the Council shall accede to this request.

The Australian Commonwealth Buildings.

Although only a few weeks have elapsed since the "island site" in the Strand was acquired by the Australian Commonwealth Government, the work of excavating for the foundations is already well advanced. It is reported—but it is to be hoped that the rumour is not true—that the Commonwealth Government have determined to establish a record for London in the rapidity of erecting this building. The balance of the purchase money—£370,000—is about to be paid, and the Government consider that, as they will be losing interest on that sum at the rate of between three and four per cent., until the new building is ready for occupation, and as they are paying rent for the present offices in Victoria Street, the greater the expedition the greater the economy. It is expected that the foundations will be finished, and the tenders for the superstructure let, by August next, and that the building will be ready for occupation with in two years.

SOME USEFUL YEAR BOOKS.

The City of London Year-Book.

No higher praise can be given to this Year-Book than to say that it is quite worthy of the city whose name it bears and whose interests it serves in every way conceivable or possible in such a relation. Commerce, education, religion, and very especially civics, are dealt with concisely and informatively; and besides the past year's record of transactions of the Corporation and of the London County Council, there is a general history of each of the City Companies. The directory portion is well arranged and classified; and altogether the book is an invaluable guide to City interests, actualities, and activities. It is published, price 5s. net., by Messrs. W. H. and L. Collingridge, 148 and 149, Aldersgate Street, E.C.

Northern Counties Federation Year-Book.

That a carefully compiled special year-book is of value and importance in bringing together a collection of facts and data relative to particular interests is quite beyond question, and the Northern Counties Federation of Building Trades Employers are therefore wise in continuing their annual, and in endeavouring to enhance with each issue its utility to those for whom it is especially prepared. It is at once a record and, in a limited sense, a directory for the building industry of the North of England, as it contains as well as the twelfth annual report of the Northern Counties Federation, and a digest of recent legal decisions, lists of trade members and sub-traders, of local authority officials, rates of wages, conditions of contract, and other useful information. The book, of which this is the third annual issue, is edited by Mr. W. H. Hope, of 14, Norfolk Street, Sunderland.

Year-Book and Directory of the Midland Centre.

Similar to the Northern Counties Year-Book in contents and arrangement is the "Year-Book and Directory of the Midland Centre." To the membership

lists, local directories of traders, rates of wages, contract forms, etc., are appended many pages of useful memoranda and tables. The secretary of the Federation, from whom presumably the book is obtainable, is Mr. Fred W. Amphlet, 58, New Street, Birmingham.

OBITER DICTA.

Art Judicially Defined.

MR. JUSTICE DARLING (to Mr. Jellicoe).—If you know anything of art, as I dare say you do, you would know that anything that is pretty is not artistic; if it is ugly it is artistic, and if it is absolutely nauseous it is very artistic indeed. (Laughter.)—*High Court of Justice, March 21st, 1912.*

Expectant Genius.

There is no reason why our cities, towns, and villages, especially London, should not have things dignified and beautiful and well placed; for many of our architects, sculptors, painters, and designers, who are the joy and envy of other nations, are anxiously waiting to give the best of their genius, if called upon to do so.—*Sir George Frampton, R.A., in the "Journal of the Imperial Arts League."*

Too Many Critics.

I am a little sceptical about the new "London Society." It is to make every Londoner a critic, but it cannot insure that any two critics will agree. As things are now the learned are content to dispute about Renaissance architecture, but with all London interested in the matter there would be a movement to pull down St. Paul's Cathedral, a counter-movement to defend it, and consequent riots on Ludgate Hill.—*"The World."*

Egg and Dart (Parthian).

A candid American architect, when pressed to tell how our buildings struck him, said: "Why, I guess they look like scrambled eggs."—*Mr. C. C. Brewer at the Architectural Association.* [In the ensuing discussion, Mr. J. M. Whitelaw said that, in view of the avidity with which American architects "conveyed" or copied details, it would be fair to retort that American architecture reminds us of poached eggs.]

Architectural Study.

One deplores the falling-off of the acquisition of archaeological knowledge and interest amongst younger architects. The great impulse given to the study of our ancient buildings, more especially churches, during the wave of church restoration in the latter half of the last century, acted in the most impelling manner in producing amongst architects many scholarly exponents of mediæval art throughout the country. The decline of this wave of restoration, and the revive appreciation of Classic and Renaissance traditions, had decreased the flow of study amongst architects as well as among the clergy who had done so much in the past to instil a love for the study of the beautiful buildings under their care. It may be hoped, however, that the newer interest may widen the whole sphere of art, and produce even more enthusiastic exponents of the historical study of architecture. To advance the training of our young brethren, one would suggest, in addition to classes, lectures and visits to buildings under trained guides.—*From president address by Mr. James Jerman, F.R.I.B., to Devon and Exeter Architectural Society.*

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY
APRIL 17th, 1912.

Volume XXXV,

No. 900.



DETAIL OF NEW TERRACE AT "FOXBUY," CHISLEHURST, KENT.
MAURICE E. WEBB, M.A., ARCHITECT; PAUL R. MONTFORD,
SCULPTOR.

This illustration shows an ornamental newel to the central steps of a new terrace which has been added to the above house. The terrace is built of Kentish Rag with Bath stone dressings, the figure work having been modelled by Mr. Paul R. Montford, and carved under his direction.



DETAIL OF HOUSE, HAMPSTEAD GARDEN SUBURB. E. GUY DAWBER, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 17th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 900.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

What Might be Done with the Crystal Palace.



Ordinary days, when there is no special attraction, such as a Good Friday concert, or a cat show, the Crystal Palace and grounds are now rather a melancholy waste, haunted only by a few sparsely scattered visitors. Even the large population of the neighbourhood, who used to regard it as a daily pleasure haunt, seem to have got tired of it. The reason seems to be, or at all events the excuse might be, that there is no central principle about it; the place has become a medley of things, nearly all of them advertisements of some kind, and the glory of the gardens has departed. The fame of the old Saturday concerts used to draw crowds there once a week, which kept up the prestige of the place; but now there are as good concerts to be heard in town, without a railway journey to them; and the Crystal Palace has dropped more and more out of notice.

But the Palace and grounds represent a great opportunity, which it would be a thousand pities to lose. The most definite proposal before the public now is that it should be made into a great "Folk Museum," illustrating the history of the nation in its architecture, art, industries, and amusements. In regard to the architecture of daily life in the past, it is proposed by the Committee concerned in recommending this idea, that this would be an opportunity for purchasing old and picturesque houses that would otherwise be unavoidably destroyed, and re-erecting them in the grounds. For the remainder of the scheme we may quote from the article which appeared in the "Museums Journal" in February, and which has been since reprinted and circulated as a statement of the case:—

"The Crystal Palace itself would serve for the display of a developmental series of furniture, pottery, glass, ironwork, textiles, etc., and for collections illustrating the customs, distinctive beliefs, amusements, personal ornaments, inventions, etc., of the English peoples. The ample dimensions of the building would enable some of the collections to be arranged as interiors; thus there might be a 'Chippendale' room, a 'Hepplewhite' room, a 'William Morris' room; also a room devoted to the apparatus and methods of producing fire in past times, a room for children's toys and games, a Folk-lore room, and so on. It would be especially appropriate if a part of the Crystal Palace could be assigned to collections—ceremonial robes, portraits, personal relics, and the like—relating to the past and present members of our Royal house. If precedent were needed, one can be found in the Royal collections preserved in the Rosenborg Castle at Copenhagen."

There is a good deal to be said for this latter part of the programme, and a very interesting permanent exhibition might be made in that way; but we doubt whether that will revive the Palace as a public resort. A good many people will go to see it once, but they will not keep going for any other inducement than the study of a Folk-lore museum. There is something more to be done with the place than that; what it is we will try to indicate.

To begin with, it seems to be overlooked that a considerable space is now occupied within the Palace by illustrations of phases of architecture of the past—not national,

but of a wider significance. There are an Egyptian Court; a Greek Court; a Saracenic Court (representing part of the Alhambra architecture); a Florentine or Renaissance Court, containing very fine casts of Michelangelo's four great recumbent figures; and a Gothic Court. Some of these are very well done; the Alhambra Court, carried out by Owen Jones, especially so; and in the Egyptian and Greek Courts, though the small scale to which the Egyptian architecture is reduced may seem rather absurd, the details are quite correct and were carried out under competent supervision. The Gothic Court is the poorest, and is, in fact, worth very little as an illustration of mediæval work, which was not properly understood at the time. But the greater part of this work is good and useful illustration of great styles of architecture; to destroy it would be a mere piece of vandalism; and it does not fall into the English Folk-lore scheme.

Our advice is that this series of architectural courts should not only be preserved but extended. The existing ones now occupy the outer portions of the nave in the half of the Palace north of the centre transept. Similar courts, under competent architectural authority, should be formed in the corresponding portion of the southern half of the Palace, illustrating other main phases of the architectural styles of the world—Byzantine, Romanesque, phases of Gothic in different countries, etc.; there are plenty of styles worth illustrating, and they should be accompanied by representations of the decorative and applied art which belonged to each period. Thus a feature which is at present incomplete, and has been fairly well begun, would be completed on the same plan. These side-courts would then represent the world's architecture, and the wide central space of the nave could be devoted to what is especially illustrative of English history, art, and industries, for which it ought to afford ample space. This would fortunately involve the destruction of that Early Victorian absurdity, the "Crystal Fountain," which stands under the smaller transept—the central transept of the 1851 Exhibition building; unless indeed that should be thought worth preserving as a piece of Folk-lore! It certainly is a curious landmark of how taste has progressed in the last half-century in this country, to reflect that this preposterous piece of glass gimcrack was solemnly erected in 1851 as the central ornament of an exhibition of arts and industries, and was not only tolerated but admired.

And out in the grounds, no doubt, might go the proposed rebuilt specimens of ancient domestic architecture, guarding, as it is said, "against the incongruous effect that would result from placing in close proximity buildings out of keeping with one another." Also let us note that "much could be done by screening neighbouring buildings with trees, and by taking advantage of inequalities of surface. Some of the houses might have associated with them old-fashioned gardens with appropriate flowers and herbs." That might be made into a tolerably decorative scheme, if only one could get a sufficient number of old houses that are worth having, to rebuild. That is a point on which we should feel rather doubtful.

The scheme as a whole might answer, but it would not make the Crystal Palace what it has been and might be again: a pleasure resort. It would be a museum, to which

people would go to study the subject illustrated, when they wanted to study it. But in fact museums are rather things for towns; places where people may go to find matter of interest when the weather is uninviting for outdoor enjoyment. Is there nothing better to be done with the Crystal Palace than that?

In England we are so beset with the idea of providing instruction for the people that benevolent persons never seem to think of providing them with pure enjoyment. Yet there could hardly be a place better fitted than the Crystal Palace to make a palace of pleasure out of; a place simply desirable for its beauty and for the beautiful things in it. Look at that view from the terrace, how beautiful it is; look at that sloping ground, how admirably suited for making a beautiful garden out of; "taking advantage"—in the words already quoted—"of the inequalities of the ground." There is the possibility of making there one of the most beautiful gardens in the world, with avenues, fountains, sculpture, parterres of flowers, and so on. With better arranged and speedier access by rail and tram (which is certainly needed), such a garden would attract people, without any Folk-lore houses; which might, however, be added in some part of the ground set apart for it, so as not to interfere with its general proposed character as a pleasure-ground. Why were there crowds of people in Hampton Court Gardens on the Saturday afternoon between Good Friday and Easter Sunday? Because it is a beautiful place. The galleries of the Palace were closed that day—we know not why; but people did not want them particularly; they came in crowds to be in a beautiful garden. Make the Crystal Palace grounds a beautiful garden, and they will come there in crowds too. It would be a large operation, but it might pay in the long run; and even if it did not pay in money return, it would be worth doing with public funds. We have few enough beautiful places; here is a chance of making another.

And one of the principal things to be seen to in such a case, both for the Palace and its grounds, would be to decree against the whole tribe of advertising erections. At present every erection in the grounds is merely a blatant advertisement of something or other; and the interior, except for the architectural courts, is a mere bazaar. It is all very well to provide that any erection of the kind must be decorative; the public soon see through that, and do not want kiosks which are advertisements. For the interior of the Palace what we would wish to see, after the completion of the series of architectural courts (which would be really worth doing if done well), would be a winter garden, with concerts, and with a whole range of sculpture. It was remarked by a writer on art a good many years ago that the series of sculpture casts then in the Palace made one of the best representative collections of sculpture within reach of London. The collection seems to have been somewhat depleted since then, and there are casts there that are not worth much; but a fine collection might be made both of English and of French sculpture; casts when originals cannot be had. And as there is such a want of encouragement to sculptors in England, let the Government in that case do what the French Government in a similar situation would undoubtedly do—purchase a selection of sculpture every year from the Royal Academy exhibitions, to add to the Crystal Palace collection.

The Folk-lore Museum idea would no doubt be far better than letting the Crystal Palace be demolished. But we do not regard it as the best idea. Museums are places for towns. We want to see the Crystal Palace and its grounds made into a place of beauty; purely for the sake of beauty and not for instruction. And if private enterprise cannot undertake this, the Chancellor of the Exchequer has a large surplus this year, and does not clearly know what to do with it. A small proportion of it, wisely laid out, would suffice to make the Crystal Palace a garden of delight; and the expenditure would be well worth the occasion.

Regent Street Architecture.

WE observe from letters in the papers that an agitation is again being got up to endeavour to condemn Mr. Norman Shaw's grand piece of street architecture in Regent's Quadrant, and set up the theory that London street architecture is to be controlled by the shopkeepers and their imaginary notions about their own interests. We say imaginary because the notion that shops cannot be prosperous or remunerative unless the whole front is made of plate-glass, with concealed supports behind or above it, is an entire delusion. It is simply the notion of ignorant people that because a fashion has lasted for a certain time it must be right, and that nothing else can be. Possibly there may be something in it in a case where one shop had a window space limited by architectural piers, and the next door one had unlimited plate-glass; but we are not sure even of that. The times are coming, and have to some extent come, when a good architectural treatment of a shop front will be an asset in a commercial sense, giving the shop a superior aspect. This, of course, the average shopkeeper cannot understand; he cares nothing about street architecture, and thinks that the show of his own goods through a gaping opening covered by plate-glass must be more attractive to his customers than any architectural superiority in his "front." Those who think so may live to find themselves mistaken. There seem to be a few who know better already. Near the top of the Haymarket, for instance, is a well-known cigar-shop which has the old style of front with windows on a curved plan and with small panes, which was once the most usual treatment of the London shop-front. According to the ideas of the Regent Street vandals, as we may call them, this front, in the interests of business, ought to have been long since demolished, and a flat piece of plate-glass substituted. Obviously the proprietors of this shop have known better, and have had sense enough to see that the old front gives a superior appearance to their premises and is an attraction in itself.

The agitators against Regent Street architecture point to a firm of valuers who state that on the preparation of plans for the Piccadilly Hotel they were employed by the syndicate to report to them on the rental values of the shops. When, however, it was decided to adopt Mr. Norman Shaw's elevation, "with its heavy and cumbersome-looking pillars and arches on the ground floor," they withdrew their report, "considering that the rental values were affected adversely to a very large extent." Why? What does the rental value mean? It means the present opinion of the shopkeepers as to the suitability of the premises for their purposes. And suppose that the shopkeepers are all wrong; do not know their real interests; care nothing for the interests of the public in comparison with what they imagine to be their own; cannot see that a great architectural street is of more value as a business frontage than a mean one? They will have to be taught better; will learn better in time; and then the value will go up again. The rental value only resides in the opinion of the proposed tenants. Let them be educated into better opinions; and in the meantime let them be told that the demand for finer architecture in our streets is one in which the public at large are concerned, and that the claims of the public at large (their customers) are superior to theirs.

For half a century all persons interested in and understanding public architecture have been lamenting the mean and wretched effect of our street fronts apparently standing on sheets of plate-glass, a state of things which renders all noble and dignified street architecture impossible. We have had in Regent's Quadrant a great example of how to do something finer; are we to be debarred from seeing this carried any further because some shopkeepers cannot understand the good of it?

The one criticism that we think, with all respect to Mr. Norman Shaw, his Quadrant design is open to, is that on

sees that the upper wall-face could not be so far set back except by means of girders; that it does not stand really upon the ground floor walling. That is rather what we should be inclined to call a sham in architecture, though not half so bad a one as many that are condoned every day. He thinks differently, we suppose, and considered the effect worth the means taken to obtain it. At all events, he has got the effect, and now it must be carried out in the completion of the Quadrant, however shopkeepers may rave. They will perhaps learn some day that it was better for them.

The International Society.

THE Grafton Galleries are occupied with the twelfth exhibition of the Society which calls itself by the high-flown title "The International Society of Sculptors, Painters, and Gravers," and the exhibition consists as usual of a few good pictures amid much that is either worthless or positively ugly. Even so, the Society seems to have difficulty in maintaining its "international" character, for it has had to fill up the French contingent with loaned pictures by several deceased French painters of eminence (even going as far back as Courbet), and those by living French painters are not such as to glorify any exhibition.

Among the pictures by living artists which are worth something is Mr. Strang's portrait of Mr. Festing Jones, painted with that hard metallic texture which this painter has now adopted; but it is really not only a good likeness, but a very harmonious piece of colour, and seems like a piece of common sense among the things by which it is surrounded. His imaginative or allegorical picture entitled "Laughter" is hardly a success, and the distant landscape beyond the group of figures is poor. Among the portraits Mr. W. Nicholson's "Portrait of a Barrister" has character and individuality; and Mr. Newbery's "The Blue Scarf," a portrait of a lady in a rather *degagé* attitude, painted in a rather *degagé* style, has a certain grace and spontaneity about it. Mr. Ricketts is serious in his attempt to portray "Job and His Comforter," a fine subject in itself, but his head of Elihu is hardly a success.

What some of the contributors are about, or what they are aiming at in their preposterous concoctions, or why such things should be hung in a public exhibition, it is impossible to imagine, unless they are produced in the idea that, beauty being out of the reach of the artists, they have determined to produce an effect by sheer ugliness and monstrosity. Some of the things exhibited are beyond description in any Parliamentary language. Among the small number of works in sculpture there is one exceedingly fine marble portrait bust by Mr. Tweed. The bad example which Rodin has set of exhibiting mutilated figures shows itself in the exhibition of a torso and two partial masks of faces; and M. Rodin seems determined to fool his admirers to the top of their bent by the exhibition of his sprawling bronze figure of a nude woman in an almost impossible attitude, and modelled in the roughest possible manner. The same tendency is seen in some of the paintings; a study of a nude figure used to mean a desire to exhibit a fine and learned modelling of the figure, but that is the last thing thought of with the exhibitors at the International, where anything called "Nu" in the catalogue is generally found to be a mere splash of colour with a distant resemblance to a figure, and no modelling whatever. This kind of thing cannot, one may hope, go on for very long.

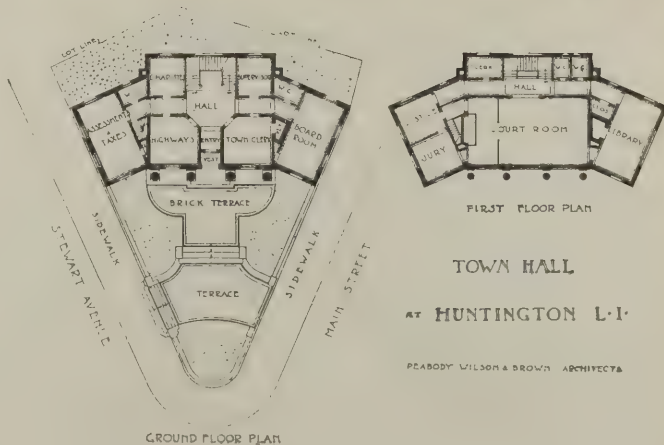
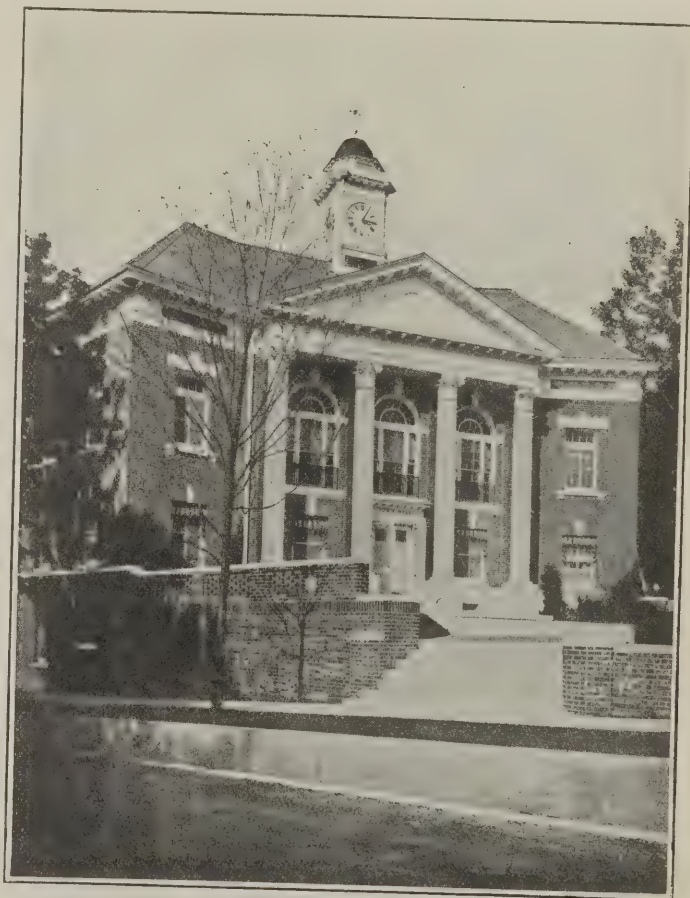
There are some good landscapes, mostly small and of rather a sketchy order. Mr. Jamieson makes an effective little picture of the octagon pavilion at the Trianon; Mr. Oliver Hall's "A Westmorland Peat Moor" is a powerful but gloomy composition; Mr. Whitelaw Hamilton's "Upland Landscape" and Mr. Peppercorn's "Near Porchester" are both good pieces of landscape composition, though the latter is no more like Nature than usual in regard to the colour and texture of trees. Mr. Cameron, in his "Badenoch," has produced a powerful effect of

evening sky behind dark mountains, but everything else in the scene is sacrificed to obtain this effect of sunset light. Both Mr. Oliver Hall and Mr. Cameron are essentially etchers, and first gained reputation as such; they are successful in dealing with landscape in black and white, but when they come to paint Nature they seem to see her mainly in black and white, and sometimes only in black.

At the end of the last room is a whole series of pen-and-ink drawings made by Mr. E. J. Sullivan in illustration of Carlyle's "French Revolution." These (something like the book itself) are not so much illustrations of fact as symbols of the state of things during the Revolution. As such they are very powerful, and quite in the spirit of the author they illustrate.

Town Hall, Huntingdon, Long Island, U.S.A.

THIS is a charming specimen, from America, of the Town Hall for a small country town. The plan is very well managed, and the placing of the side wings at an oblique angle gives a picturesque effect to the exterior without interfering with the arrangement of



the plan. The front elevation combines dignity with simple and unpretentious character. Messrs. Peabody, Wilson, and Brown are the architects. The illustrations are taken from the "Architectural Record."

Inigo Jones at Lincoln's Inn.

THE L.C.C. are securing the preservation of the façade by Inigo Jones called Lindsey House, on the west side of Lincoln's Inn Fields, in the course of any alterations that may be made on that side of the square. The front is one of Inigo Jones's quiet and dignified pieces of Classic architecture, with an order of pilasters in the upper storey; on the boundary between the forecourt and the foot-walk there are still two fine and monumental brick piers; it is stated (we know not on what authority) that there were formerly six of these piers. The idea that provision should be made for the preservation of the main internal features of the building is, we fear, rather too late; they are, we believe, all partitioned up into small offices internally; there may be some characteristic chimneypieces and ornaments left. We cannot be too careful to preserve any examples of Inigo Jones's work in London, seeing how little of it there is left.

The Architectural Association Sketchbook.

THE "First Quarterly Part, 1911," which is the official description of the last issue of the Sketchbook, starts with a rather unusual title page, the centre being occupied with a "sanguine" sketch of the profile head of Seti I., from Abydos, by Mr. W. S. George, with a marginal design symbolical of Egypt. This does not mean to imply a specially Egyptian character in the contents of the plates, as the only drawing of ancient Egyptian architecture is Mr. Palmer Jones's of the temple of Thothmes III., which closes the series, and seems an accurate but not otherwise a very remarkable sketch. The bulk of the drawings represent English work; two city churches—Christ Church, Spitalfields, and St. Lawrence Jewry—are the buildings most fully illustrated. Mr. Durnford gives a very complete and neatly executed set of drawings of Hawksmoor's church, with a note that the church and fittings have been restored to their original condition, as shown in Hawksmoor's working drawings. We should have liked to give a reproduction of the perspective drawing of the remarkable tower, which is what makes the real architectural interest of the church, but the original, in line, was too faint to make a good reproduction, nor is the plate in the sketchbook very satisfactory, as a plate. The perspective drawing is exceedingly good, but a design so powerful and unusual as this would have been done more justice to by a more powerful style of drawing. It is interesting to notice how cleverly Hawksmoor has appropriated the Gothic broach spire to a design which is altogether Classic in features, though somewhat Gothic in its freedom of treatment. The church of St. Lawrence Jewry, by Mr. Dowdeswell, is more remarkable for its detail than for its general lines, and the drawings are treated accordingly.

St. Mary's, Bottesford (Leicestershire), drawn by Mr. Cecil Sutton, has a good thin spire of a type common in Lincolnshire and Northamptonshire; the drawings are geometrical, as are those of Edington church, by Mr. Grant; both careful sets of drawings, but of a class of work which has less of interest for this generation than for the last. 14, Cavendish Square, by Mr. Hansford White, is one of the big Classic houses on the north side of the square, the façade and details of which were well worth drawing. Mr. L. M. Gotch gives a considerable number of drawings of Neville Holt, Leicestershire, including some interesting details of carpentry. The best and most effective plate in the English section of the sketchbook is that of the stairway of Waterloo Bridge, looking up, reproduced from a washed drawing by Mr. W. I. Keir; a fine drawing of a grand piece of solid masonry.

Among the foreign subjects Mr. A. G. Henderson's drawings of the Hôtel de Valois, Caen, and a view above the aisle roofs of old St. Etienne in the same town, are very good; the latter shows very effectively the curious design of the buttresses above the aisle roofs. Mr. Hepworth's large measured drawing of the west front of Rouen, double plate size, is an heroic piece of work, and must have cost much time and perseverance. Mr. Hornswell has a couple of good washed sketches of Italian bits; Mr. Prentice contributes two pen-sketches of Spanish subjects, and Mr. Palmer Jones seven drawings of subjects, chiefly Saracenic, from Egypt, besides the Thothmes drawing already mentioned; the details of plasterwork in the monastery of Surian are exceedingly interesting and unexpected in character.

"Scapa" in Japan.

WE drew attention the other day to the provisions of the new Bill for the regulation of advertisements which the Society known as "Scapa" proposes to bring before Parliament. It is interesting to learn, from a letter from Mr. Richardson Evans in the "Times" of the 9th inst., that Count Hayashi, the former Japanese Minister in London, not only returned to Japan fully imbued with "Scapa" ideas, but that the Japanese Government has lost no time, on his recommendation, in putting public advertisements under restrictions by a law which came into force early last year, and which empowers the executive to prohibit or restrict advertising display whenever it thinks such prohibition necessary for preserving the beauties of scenery, and to order the removal of any object for that reason. It has taken Japan a much shorter time to arrive at legislation on the subject than it has taken us in England; but the Japanese are an artistic nation, who are more easily aroused on such a subject than the English. And if, as we gather, there is a danger of the over-run of Japanese scenes with advertisements of the European type, we can imagine nothing more absolutely incongruous with Japanese scenes and Japanese feelings. Their Government has done wisely to take this matter in hand before it is too late.

The Glasgow Municipality and the Architects.

A LONG discussion in the Glasgow Town Council has led, we are glad to notice, to an acceptance of an amendment to throw open the additions to the Municipal buildings to public competition, by a majority of 30 to 27. It is not a large majority, but it settles the question in the right direction. In the speech of Bailie Mason, who moved that the municipal officials should be entrusted with the work, we find the usual arguments used on such occasions; an open competition would mean increased expense; the official scheme had been carefully considered by the committee; the assistant architects employed upon it had gained a premium in the London County Hall competition, and must therefore be architects of great eminence. They did not want to rival Solomon's Temple, but only to have "a good business building which would be a credit to the city." We all know what that kind of expression means; it means the production of architectural commonplace. Mr. Carlton, who moved the amendment which was ultimately carried, denied that the plans had been studied by the committee at all, and wisely urged that it was their duty to endeavour to get the very best skill they could for this work, and that in inviting competition designs they should put no restrictions on the architects, but allow them to provide their own plans as well as their own elevations; which, of course, was the only way to make the competition worth anything. One speaker said it was the duty of the Council "to countenance the ability displayed in their own office"; it does not seem to have occurred to him that the first duty of the Council was to the public, and not to their own staff. However, the amendment has been carried, and there will probably

be on that account a better chance of the new building being an architectural credit to the city. The matter is of more than local importance, for every decision of the kind tends to become a precedent in one way or another, and it is well that the tendency to have public architecture manufactured in the municipal office should be checked, for the benefit both of architects and architecture; for, as the "Glasgow Herald" pertinently observes, "the architects' protest, though no doubt embodying some perfectly legitimate professional aspirations, is fundamentally one affecting the public interest."

Factitious Rusticity.

WE notice, with rather less amusement than regret, the steady growth of a tendency to exaggerate the more primitive features of old work in reproducing them in current English domestic architecture. It is sometimes said that the acknowledged beauty of modern domestic work owes much to a return to old traditions. In a sense, this is of course true; but if it is to be interpreted as sanctioning the fashion in recent years of building interiors of houses as if they were labourers' cottages, or old-fashioned farm-houses, with crude brick grates and low ceilings carried on heavy roughly dressed beams, and furnishing them with rush-bottomed chairs and tables too heavy to be easily moved, we should reply that all this is only an affectation; it is building according to the wants and tastes of a past age, instead of according to those of the present day. If there are people who enjoy that kind of factitious rusticity in their homes, let them indulge their own tastes by all means; but it is absurd to lay it down as a rule for modern life. Rooms and furniture suitable to the refinement of a cultured society need not on that account be inartistic; they can be quite as good in that sense as cottage furniture, or better; and these drawing-rooms designed like kitchen interiors represent merely a "fad," and a rather foolish one, and we trust that architects will not yield to the temptation to encourage it. "Simple-life" architecture of this kind is, for the moment, greatly affected in America, where the slavishness with which old, crude, and inappropriate details are copied in designing modern domestic interiors is comparable to the wholesale importation into that country of Classical details for the adornment of modern or commercial public buildings.

SOME NOTABLE BUILDINGS IN BUDAPEST.

IT has been the misfortune of Austria, both architecturally and otherwise, to have been, by its situation in Central Europe, always more or less of a debatable land, where for centuries conflict constantly raged, to the detriment of the arts of peace. Consequently the country presents fewer examples of mediæval architecture than almost any other country. For many years, large portions of territory were in the possession of the Turks; and there were incessant wars, not only with Turkey, but with Hungary and Poland. Moreover, it has been remarked that, as if the ravages of war were not enough, Nature herself seems to have conspired against the stability of buildings in Austria, scarcely one of its ancient monuments having escaped earthquake, tempest, or fire.

Yet, by some extraordinary freak of good fortune, it happens that what must always have been the finest church in these dominions is the best preserved—namely, the fine cathedral of St. Stephen at Vienna, with its stately interior, magnificent spire, and graceful details; the west front, with its octagonal spire-capped towers, being a valuable example of the beautiful Danubian buildings of the thirteenth century.

Hungary was, of course, involved in the calamities of Austria, and its buildings suffered even more severely; Buda, and the greater portion of its Danubian provinces, having been, from 1541 to 1689, in the hands of the Turks, who, while they were savagely destructive of Christian buildings, left but few examples of their own architectural skill.

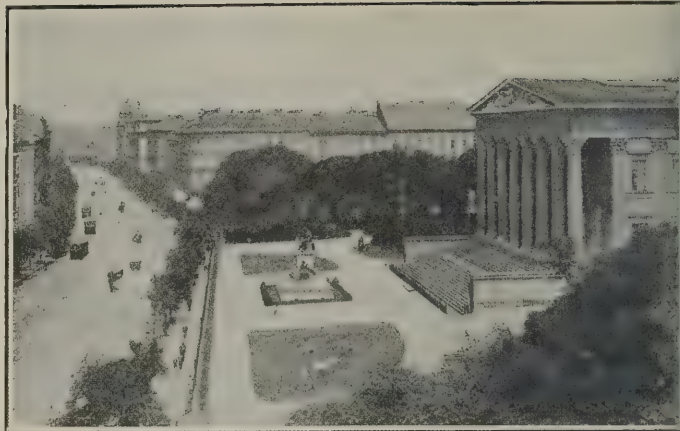
Austria-Hungary, however, which, next to Russia, is the largest Empire on the continent of Europe, embracing an area of 675,887 square kilometres, and containing a population of about fifty millions (the capital, Budapest, comprising about 800,000), is by no means destitute of interesting modern architecture, as the accompanying illustrations will amply demonstrate. The new city (virtually dating from 1872, when several towns were united under the present name) of Budapest, the outcome of the Constitutional Union of the two States which was first proclaimed in the Pragmatic Sanction of 1723, and was confirmed by the "Compromise" of 1867, is naturally distinguished by an atmosphere of rather extreme modernity;



GENERAL VIEW OF BUDAPEST FROM THE CHAIN SUSPENSION BRIDGE.



THE AGRICULTURAL MUSEUM, BUDAPEST GENERAL VIEW.

THE NATIONAL MUSEUM, BUDAPEST.
POLLAK, ARCHITECT.THE AGRICULTURAL MUSEUM—GROUND PLAN
Ignac Alpár, Architect.
A—Romanesque Section of the time of Arpád
B—The Pointed Arch Styles
C—Renaissance Section
D—Ancient Pavilions
E—Medieval Wood Bridge
F—Sanctuary

for well within the last quarter of a century it has been virtually rebuilt, always with a keen eye for every detail of convenience and of comfort, which often degenerates into luxuriousness.

A peculiar item of town-planning which countries of less fortunate climatic conditions could hardly hope to emulate is the large system (inaugurated by the Hungarian Government in 1897) of planting State roads with avenues of fruit-trees—more than 800,000 fruit-trees have been planted along 6,000 miles of road, the object being to make their produce pay for the maintenance of the roads. By the same, or a similar, law it was enacted that every parish should, when possible, plant fruit-trees along its roads, and that every parish should have its orchard; and to this intent during the past ten years more than sixty million fruit-trees have been supplied from the State nurseries.

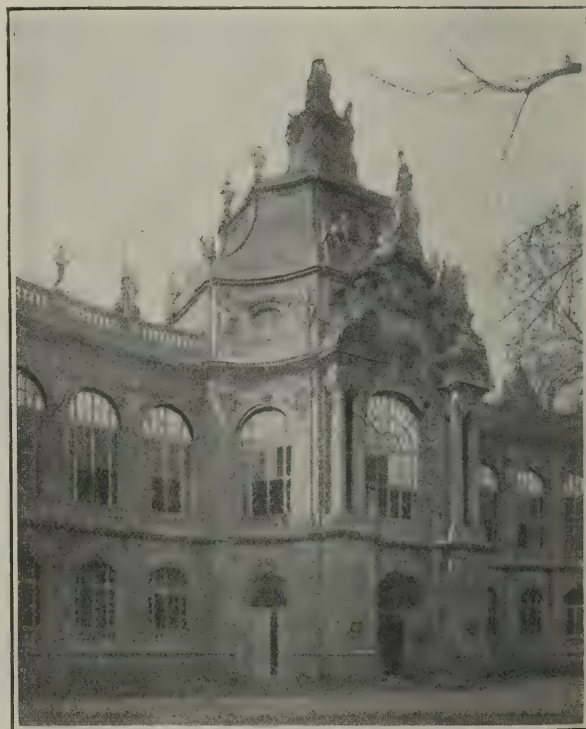
Having no architectural traditions of its own, Hungarian architecture necessarily owes much to the influences of surrounding countries; yet it possesses a strong individuality, which becomes manifest in the absorption or the adaptation rather than in the imitation of the examples to be found in Munich and Vienna. "It is," as Mr. Schuyler M. Meyer remarks in a recent article on the subject in the "Architectural Record," "precisely this conflict of traditions, of education and training, that has resulted in the most diverse and picturesquely bizarre, though often very beautiful, architectural creations."

Occasionally foreign influence has been over-strong. The Central Railway Station of Budapest, for instance, is strongly reminiscent of the former Palais des Champs-Élysées, and its environs have a distinctly Parisian atmosphere, as if they had been Haussmannised. "In Budapest one passes with prodigious rapidity from Gothic to Re-

naissance, from Italian to German, then to a Classic style intermingled with Arabic, the whole adorned with virulent colours along the borders and copings of the buildings. . . . In Vienna the houses are usually four storeys high, while in Budapest one seldom sees them over two or three; and the further one goes into the provinces from the Hungarian capital the more the height diminishes, going down to two and then to one storey. But everywhere is found the same *luxe de façade* obtained without too much dependence on foreign influence. Nor have the windows and doors in Budapest any one particular style. The variety of styles is great, but there is nothing disagreeable in the composition."

In Hungary, as in Spain, the houses are often provided with an interior court, forming a *patio*, with a balcony running round each floor. The court is sometimes covered over, and may then, upon occasion, be used as a huge dining-room. With respect to interior wall-coverings, the Hungarian is rather disposed to discard wall-paper and tapestry, and to paint his walls with simple but often very effective designs.

The park-like—almost forest-like—precinct of the Varos Liget is the most beautiful spot in the capital. It may still

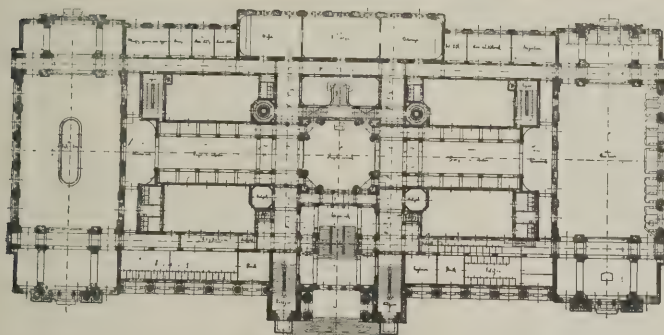
THE AGRICULTURAL MUSEUM, BUDAPEST: RENAISSANCE
PAVILION.



DETAIL OF THE PALACE OF THE EMPEROR FRANCIS JOSEPH ON THE BÜRGTERASSE, BUDAPEST.

The Royal Palace was erected by Maria Theresa in 1749-71, restored in 1849 after a fire, and greatly extended during 1874-1906 by Ybl and Hauszmann. The facade towards the Danube is 1,000 ft. long, and the central part is crowned by a dome 203 ft. high, and the building contains in all 865 rooms. The equestrian statue is of Prince Eugene (Rena, Sculptor).

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



Budapest, Hungary.

THE DOMED-PLAN OF MAIN FLOOR.

Ignac Alpár, Architect

be described, without much exaggeration, as a "wild wood in the centre of a great city," and about its central lake are grouped the buildings of the Agricultural Museum (p. 396) by State Architect Ignac Alpár. The importance of this building is realised when one remembers that agriculture is the chief industry of Austria-Hungary, employing some fourteen millions of the people. The Museum was erected in 1902-4, and is modelled after the Romanesque, Gothic, and Renaissance buildings of the exhibition of 1896.

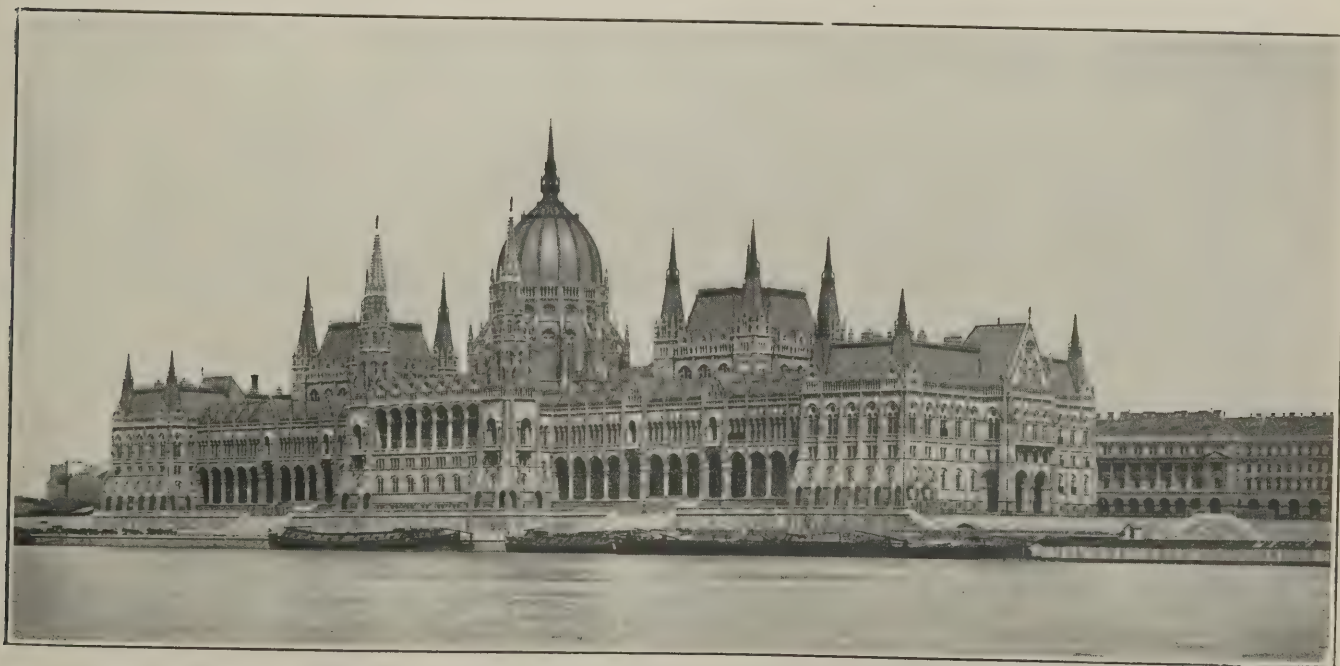
Among the most strikingly interesting structures of Budapest are the secular buildings in the Donauzeile, the

Calvin Platz, and the Andrássy Strasse; the Academy (1866), the National Museum, with its fine Corinthian portico, the Royal Opera House (1884), and the handsome pavilions of the Andrássy Strasse, are all in Italian Renaissance style. The Kettenbrücke (p. 395), joining Buda on the west to Pest on the east, is 1,227 ft. long and 39 ft. wide, the chains resting on pillars 160 ft. high. Two colossal lions carved in stone adorn each end. It was erected in 1849, and is one of the most successfully designed suspension bridges in Europe. It was erected by the English engineers Tiernay and Adam Clark. Three of the six bridges which cross the Danube at Budapest are suspension bridges.

The Houses of Parliament were erected in 1883-1902 from the designs of Steindl, in late Gothic style. They cover an area of 4 acres, and comprise a central block with a dome (315 ft. high), and two towers (256 ft.), two wings that are occupied respectively by the House of Representatives (south) and the House of Magnates (north). Ninety statues embellish the exterior, those on the west side representing Kings of Hungary, and those on the east Hungarian generals and statesmen. Over the chief portals are statues of Lewis I. and Matthias Corvinus. The Throne Room is a domed hall 89 ft. high, sixteen pillars supporting the dome. The Session Hall of the Representatives is 84 ft. by 77 ft. by 56 ft. high, and gives seating accommodation for 438 of the 453 members.

The National Museum (p. 396) was built in 1830-44 from designs by M. Pollak. A Corinthian portico forms the entrance on the main façade, and in front of the steps leading to it is a seated bronze figure, modelled by Strobl, of John Arany the poet.

The Royal Palace (p. 397) was erected by Maria Theresa in 1749-71, restored in 1849 after a fire, and greatly extended during 1894-1906 in the baroque style by Ybl and Hauszmann. There are 860 rooms in all. The façade towards the Danube is 1,000 ft. long, the central part being crowned by a dome 203 ft. high. To the left of the entrance to the court is the Matthias Fountain, by Strobl, erected in 1905. Of the rooms that are at present open to public inspection, the most interesting are the Large Hall and the adjoining apartments in the north wing; the Hapsburg Room under the dome; and the St. Stephen Room in the south wing, which is fitted up in the Romanesque style. In front of the central part of the palace, and facing the Danube, is a bronze equestrian statue of Prince Eugene, by Réna, erected in 1899.



THE HOUSES OF PARLIAMENT, BUDAPEST. STEINDL, ARCHITECT.

PROPOSED FLATS, UPPER BAKER STREET.

This block of flats, which the Metropolitan Railway Company are about to erect on a site at the junction of Allsop Place and Upper Baker Street, over their line, is to be a steel-framed fire-resisting building with reinforced concrete floors and 14 in. brick walls. The elevations are to be faced with purple bricks, with cherry-red rubber arches and Portland stone dressings. The flats will be decorated and finished in a substantial manner. The halls will be lined with marble and tiles. Oak joinery, automatic electric lifts, low-pressure hot-water heating to supplement the open fires, and electric lighting, will be provided.

This work is one of the many improvements now being carried out around Baker Street Station by the engineer

of the company, Mr. W. Willox, M.I.C.E. His architectural assistant is Mr. C. W. Clark, A.R.I.B.A., P.A.S.I., and the resident engineer is Mr. O. G. C. Drury, A.M.I.C.E.

COMPETITIONS.

The Weir Hospital, Balham.

From the designs submitted in the competition for the above building the trustees of the Weir Charity have selected that of Mr. R. J. Thomson, of Wimbledon.

The Federal Capital City, Australia.

The names of the adjudicators in the competition for the Australian Federal capital have been announced as follows: Chairman, Mr. J. M. Coate (surveyor); Mr. J. A. Smith, President of the Victorian

Institute of Civil Engineers; Mr. John Kirkpatrick, of Sydney (architect); and as Secretary, Mr. C. J. Clarke, of Tasmania (architect).

Miners' Federation Hall, Bolton.

Mr. Jonathan Simpson, F.R.I.B.A., the assessor in the above competition, has awarded the premiums as follows:—1st, Bradshaw, Gass, and Hope, of Bolton; 2nd, Sykes and Evans, of Manchester; 3rd, Thos. E. Smith and Sons, of Bolton. There will be no public exhibition of the designs.

LIST OF COMPETITIONS OPEN.

APRIL 20TH. ADDITIONS TO SCHOOL, DALBEATTIE.—The School Board of the Parish of Urr invite competitive plans of a proposed addition to Dalbeattie Higher Grade School of 3 class-rooms to accommodate 50 pupils each, and 3 technical rooms for wood work, cookery, and laboratory. Plans, with estimates of each of the works, to be lodged with James Little, solicitor, Dalbeattie, Clerk to the Board, not later than April 20th.

APRIL 20TH. BIRMINGHAM BLUE COAT SCHOOL.—Competition strictly limited to Birmingham architects. In a preliminary competition, three designs will be selected, and the authors will be paid £50 each to develop and redraw their plans to a larger scale, showing further details. In the event of the Governors failing to proceed with the second competition, the authors of the three designs will be paid £25 each. Assessors, Mr. C. H. Hunt, F.R.I.B.A., of London, and Mr. Charles E. Bateman, F.R.I.B.A., hon. consulting archt. to the Governors. Drawings to be delivered by mid-day of April 20th to Mr. William E. Bolton, Secretary, The Blue Coat School, Birmingham.

MAY 1ST. PAIR OF WORKMEN'S COTTAGES, RHOS RUABON.—Particulars on application to G. Meirion Griffiths, Rhos Ruabon. Raymond Unwin, F.R.I.B.A., assessor. Premiums: £10 and £5.

MAY 1ST. PUBLIC BATHS, WOMBWELL, YORKS.—Wombwell U.D.C. invite designs for swimming-baths to be erected in Hough Lane. Premiums, £40, £30, and £20. Stamped and addressed foolscap envelope to W. Quest, surveyor to the Council, Town Hall, Wombwell.

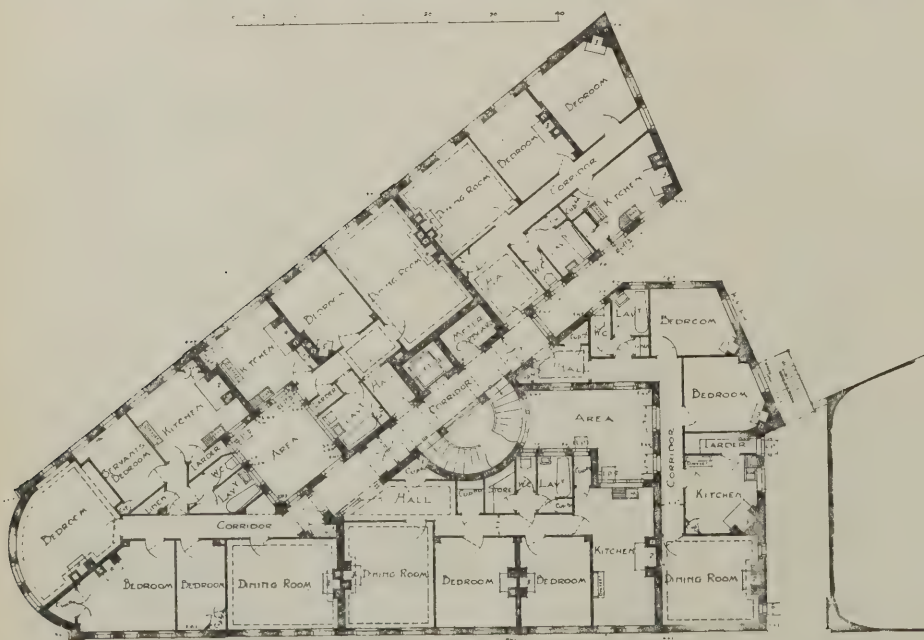
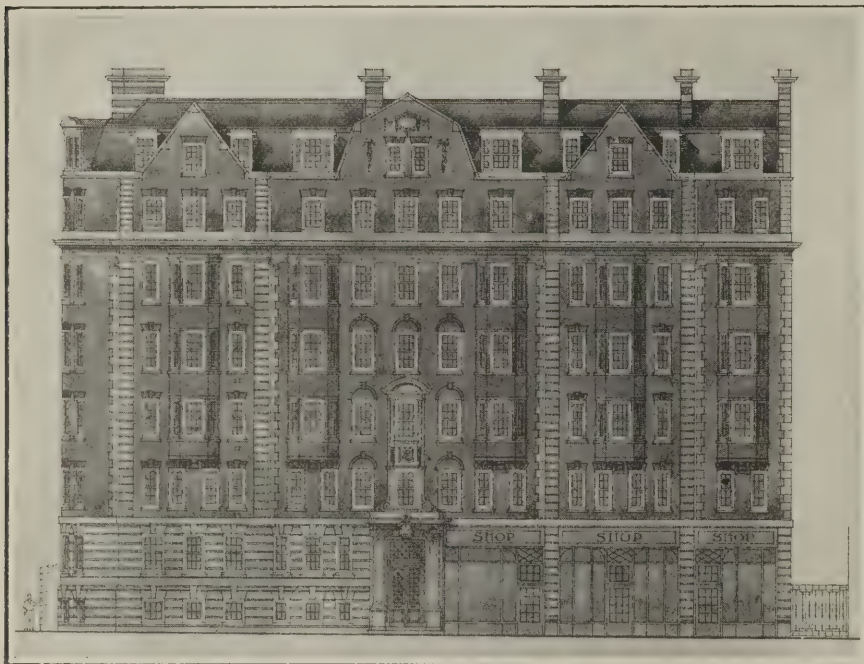
MAY 11TH. SUNK ARENA AND BAND STAND, HASTINGS.—Applications to be made to Town Clerk, Hastings. Cost limited to £4,500. Premiums: £15 15s. and £10 10s.

MAY 15TH. COUNCIL OFFICES, PORTLAND.—Portland U.D.C. offer premiums of £50 and £10 respectively for first and second designs. Particulars (deposit 10s. 6d., returnable) from R. A. Cole-nutt, Clerk to the Council, Offices, New Road, Portland. [The date has been extended from that formerly announced.]

MAY 22ND. COUNCIL SCHOOL, SOUTH-END-ON-SEA.—Local architects are invited to submit designs for above building. Conditions and plans on application to J. W. Barrow, clerk, Education Offices, Municipal Buildings. Premiums: £25, £15, and £10.

JUNE 1ST. INSTITUTE, NETHERTON, DUNFERMLINE.—Cost not to exceed £7,000. Premiums, £20, £15, and £10. Assessor, Mr. E. A. Jamieson, Apply, Secretary, Carnegie Trust, Abbot Street, Dunfermline.

JUNE 28TH. TOWN PLANNING, HALE.—Premiums of £50 and £25 are offered for a town-planning scheme.—Address Council Offices, Hale, Cheshire.



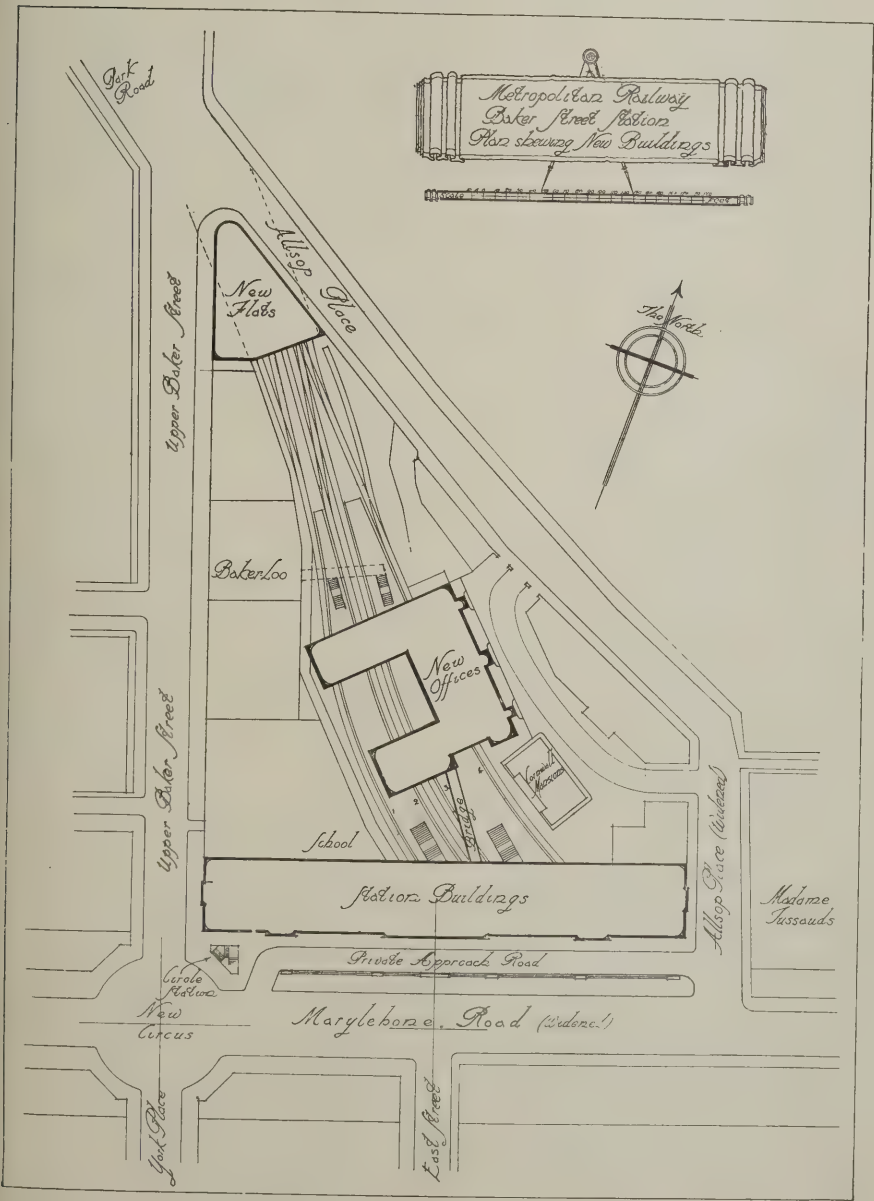
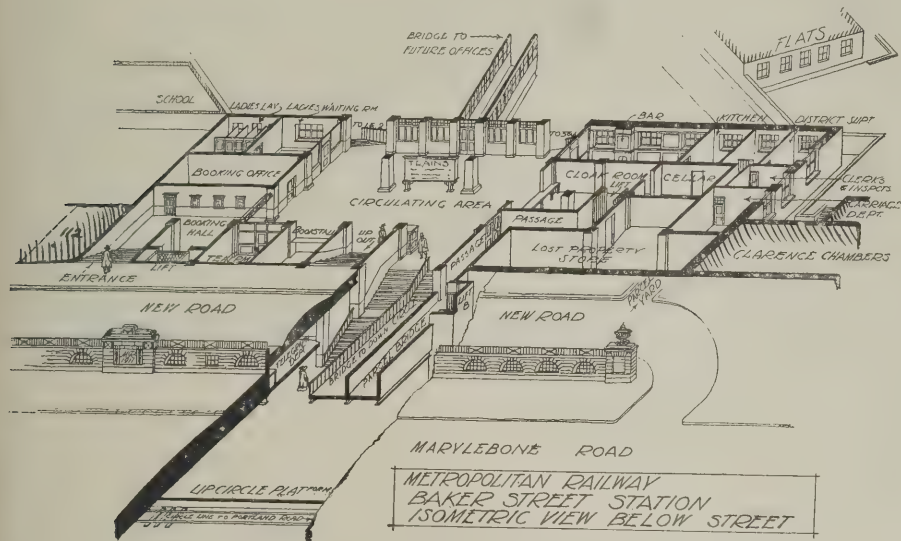
First Floor Plan

PROPOSED FLATS, UPPER BAKER STREET. W. WILLOX, M.I.C.E., CHIEF ENGINEER; CHAS. W. CLARK, A.R.I.B.A., P.A.S.I., ARCHITECT; O. G. C. DRURY, A.M.I.C.E., RESIDENT ENGINEER.

METROPOLITAN RAILWAY'S NEW OFFICES.

THE Metropolitan Railway are about to erect a large block of offices adjoining the new station at Baker Street now in course of erection, to supersede the crowded

offices at Westbourne Terrace, and to concentrate in one building those at present scattered about various parts of their system.



The chief engineer of the Metropolitan Railway, Mr. W. Willox, M.I.C.E., under whose control these various works are being carried out, has selected the system of Messrs. Edmond Coignet, of 20, Victoria Street, Westminster.

The principal dimensions of this large building, which is to be constructed entirely in reinforced concrete, are as follows: The total length of the front elevation will be 140 ft., and the height, measured from the foundations to the roof, will be approximately 90 ft. The back portion of the structure will have two wings, measuring respectively 111 ft. in length by 38 ft. in width, and 100 ft. by 43 ft. for the smaller wing, the latter being connected to the booking-hall of the new station by a footbridge 82 ft. in span, 10 ft. wide, and with a height of 15 ft.

A retaining wall in reinforced concrete and of a length of 152 ft., will run parallel to the front elevation. The total length of the retaining wall, including the returns, will be 212 ft., the height being 24 ft.

The walls of the building are to be entirely in reinforced concrete of a thickness of 6 in., and for the principal elevation the wall is to be faced with brick-work and faience.

The building will comprise a lower basement, basement, booking-hall floor, ground floor, first, second, and third floors, and a flat roof. The superloads up to the first floor included are to be 150 lb. per square foot, the second and third being 90 lb. per square foot, and the roof 40 lb. per square foot. The total superficial area of floors and roof in reinforced concrete will be approximately 65,000 square feet.

The plans here reproduced explain the arrangement. The building is to be carried on concrete stanchions over the new platforms, the lowest floor being level with the booking-hall of the new station; store and strong rooms, and the heating chamber being at a lower level and alongside a set of rails, thus facilitating the handling of the coal for heating, and the stores.

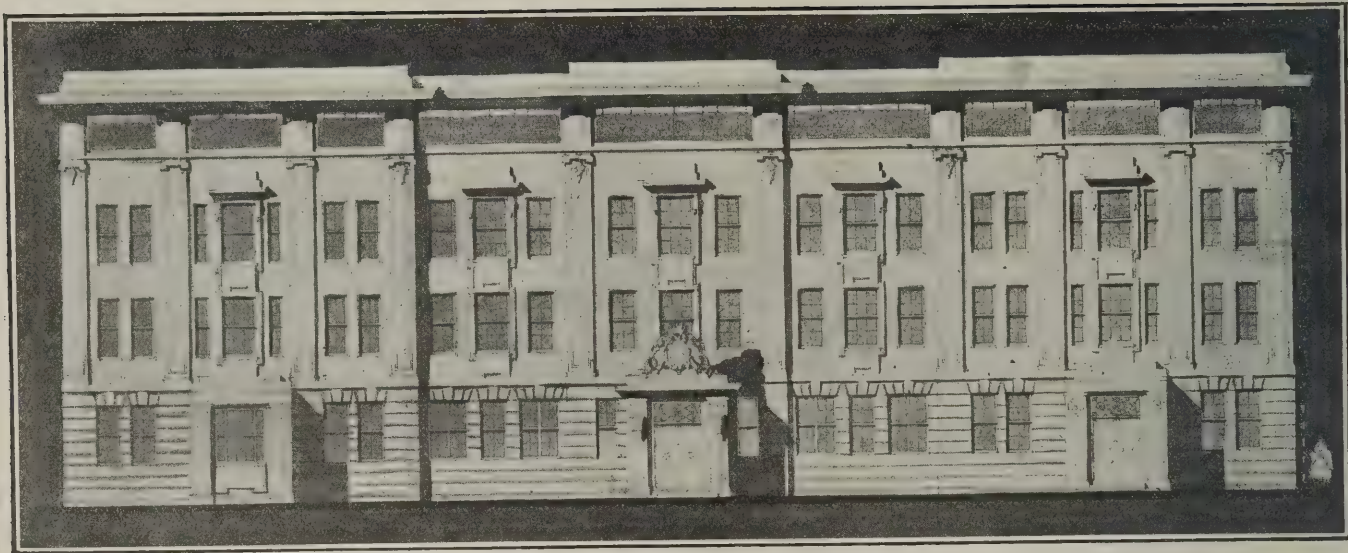
The ground floor, which is at street level, accommodates the suites of the principal officers; and the board room, which is planned between two committee-rooms and with sliding doors, can be enlarged to hold the meetings of the company. These rooms will be panelled in hardwood, with double partitions and windows to shut out any noise from the railway below. The engineer's office is placed in the north wing, so as to get the necessary light for the drawing-office.

Automatic lifts are provided in the staircase halls; the south one descending to platform level to facilitate the collection and despatch of cash, tickets, etc., the north one connecting the accountant's and other departments with the strong rooms in the basement. On the top floor are kitchens, dining-rooms, and caretaker's quarters.

The building will be heated throughout on the low-pressure hot-water system.

The architectural work has been designed by Mr. Willox's architectural assistant, Mr. C. W. Clark, A.R.I.B.A., P.A.S.I.; and Mr. O. G. C. Drury, A.M.I.C.E., is the resident engineer.

The Coignet system, which has been adopted for this work, is at present also being used for the construction of the new bridge at King's Cross Station for the same company. Messrs. Lovatt, Ltd.,



DESIGN FOR NEW OFFICES, METROPOLITAN RAILWAY, BAKER STREET, LONDON, W. CHAS. W. CLARK, A.R.I.B.A., P.A.S.I., ARCHITECT.

of Wolverhampton and London, are the contractors for the general work, and Messrs. Drew Bear, Perks and Co., for the steelwork.

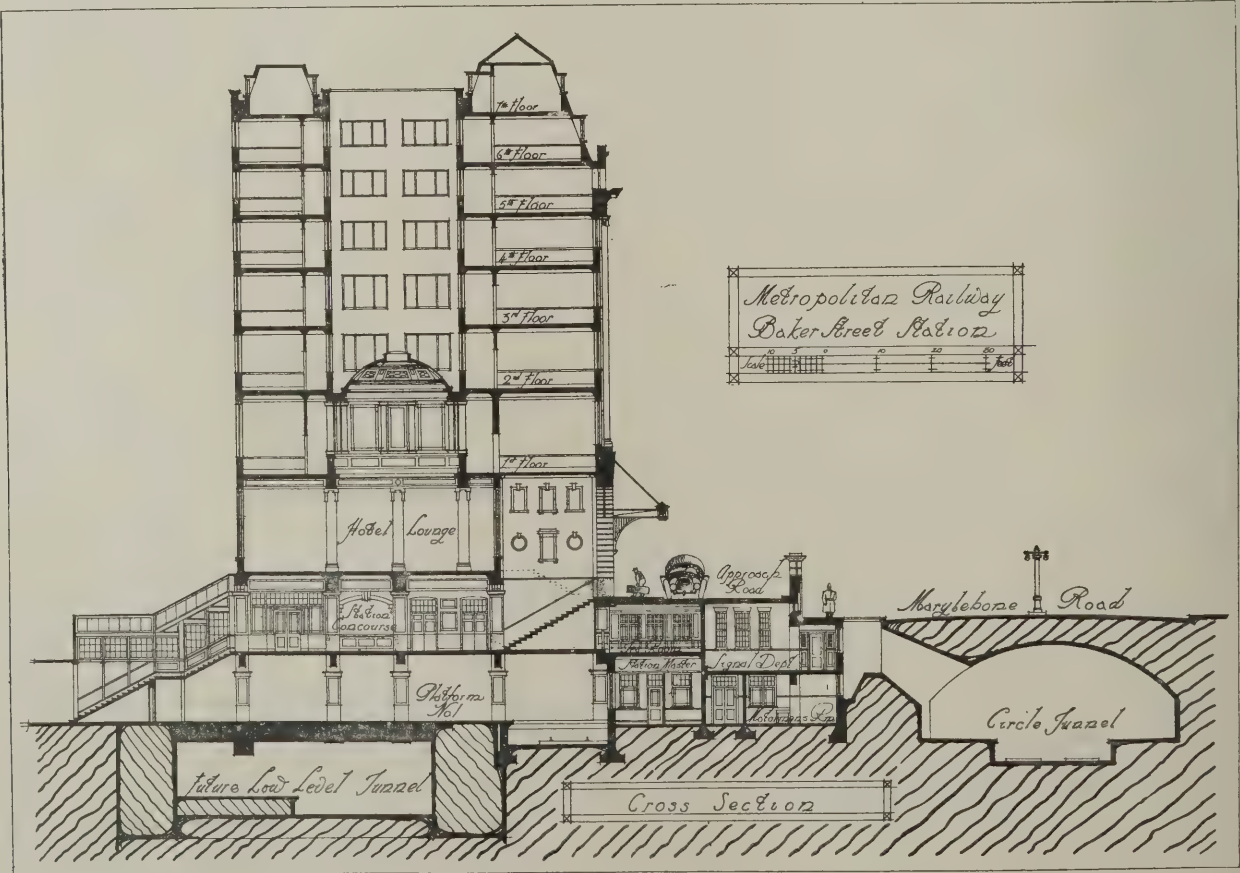
The reconstruction (by Messrs. Perry and Co., of Bow) of the tunnel under Park Road, which was involved in the scheme under notice, presented considerable difficulty. Two large sewers had to be diverted without interference with their functions, and the old tunnel had to be demolished without interrupting the railway traffic. The old tunnel was of brickwork (25 ft. span), and the new covered way is being constructed with

concrete walls and steel girders with reinforced concrete between. The walls are of solid concrete from 7 ft. to 10 ft. thick, and the steel girders are of heavy section, from 35 ft. to 63 ft. span. The sequence of operations was as follows: The 6 ft. 6 in. by 4 ft. 4 in. London County Council sewer for a length of 45cft., and the 3 ft. 9 in. by 2 ft. 6 in. Marylebone Borough Council sewer for a length of 300 ft., were first diverted, and the concrete retaining walls constructed, the steel girders were erected on the retaining walls, and the old tunnel was demolished. Large gas and water mains have also had

to be diverted. The large steel girders were erected upon the site by hydraulic machinery, so as to avoid nuisance to the inhabitants by excessive hammering. For four of the illustrations (those on pages 404, 405, showing plans) we are indebted to the courtesy of the "Railway Gazette," which is published at Queen Anne's Chambers, S.W.

The elevation to the Marylebone Road is illustrated on page 403.

We hope to find an opportunity of dealing in a future issue with some of the more important features of the reinforced concrete construction.



THE MODERN HOUSE.*

BY PERCIVAL M. FRASER, A.R.I.B.A.

CERTAINLY not five per cent. of the adult population of London, the author supposed, could give a coherent statement of the essential distinctions between the architecture of Westminster Abbey, St. Paul's Cathedral, and the new Roman Catholic Cathedral. Yet it is only by general public interest in the art that architecture can make any advance. When the elegance and intrinsic beauty of design, workmanship, and finish of a structure makes a greater appeal to the general public than a mere display of ostentatious expenditure, then we can hope to obtain a more healthy co-operation between the architect and his client, to their mutual benefit.

Webb and Nesfield.

Having tabulated the factors which are essential "to the making of a complete and habitable house," and after tracing the historical development of domestic architecture, the author recalled that the remarkable efficiency and beauty of the best types of modern dwelling were first attained some 40 or 50 years ago by Philip Webb and Eden Nesfield, whose work has left a lasting impression on English domestic architecture. Then the pioneer work of Norman Shaw at Bedford Park gave the impetus to the present-day garden suburb movement.

Many others have all left their imprint on the times as having produced a series of dwellings unparalleled for their beauty and utility. Their genius has been directed also on the design of the garden, with the effect that many of these rival even the famous gardens of Italy.

What the Public Want.

With regard to the public view of modern houses, the author gave a summary of opinions which he thought might be fairly taken as voicing the general feeling on, and emphasising the striking details of, house planning.

A number of distinguished men and women were asked the following questions:—

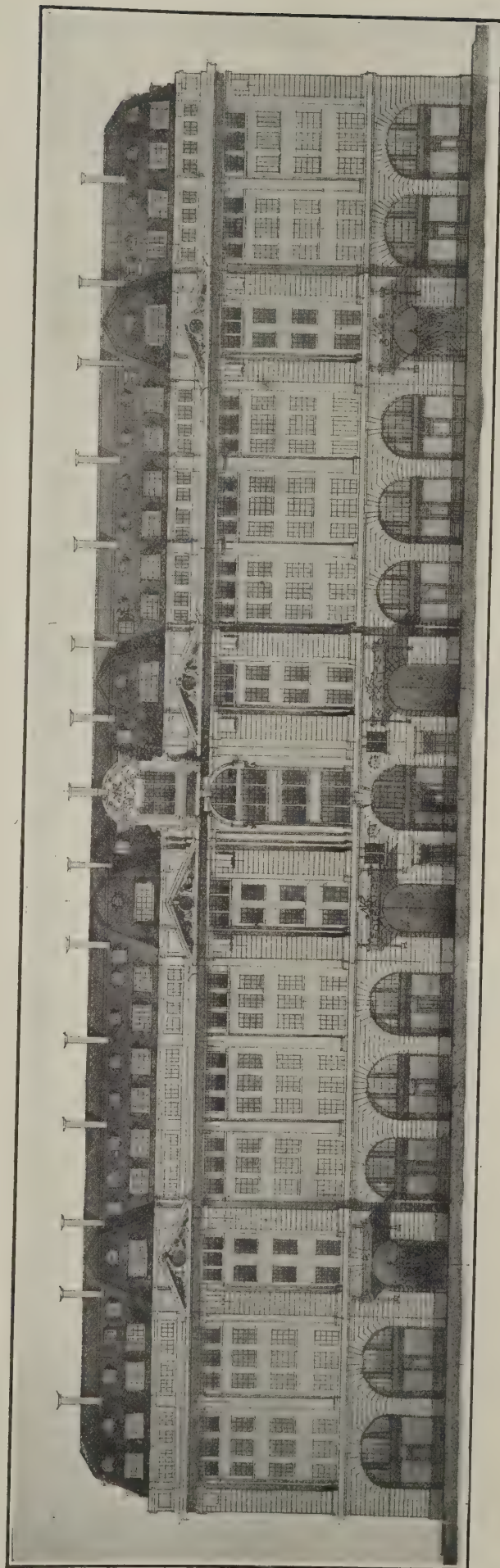
- (1) What has struck you as the worst point about the average house?
- (2) What is the greatest improvement you have met with in building or in the fittings?

Among those who contributed replies were: Thomas Hardy, Sir Edward Poynter, Arnold Bennett, H. G. Wells, Sir Arthur Pinero, J. K. Jerome, Hall-Caine, Mrs. Despard, Israel Zangwill, Hiram Maxim, W. W. Jacobs, and others.

The opinions put forward in answer to those two questions may be summarised respectively as follows:—

- (1) Worst Points.—The large hall for a small house being unsuited to English requirements. The open heating arrangement, which makes portions of all rooms uninhabitable. Ventilation primitive. Sliding sashes (these should be superseded by casements with transoms and top lights). Basements, a great evil. Cupboard accommodation always inadequate. Windows too small and used without discrimination. Smells permeating the house from the kitchen. The continual labour entailed by stone steps and polished metal fittings. No proper accommodation in rooms for furniture.

*Extracts from a paper read before the Institute of Sanitary Engineers.



REBUILDING SCHEME FOR THE BAKER STREET STATION OF THE METROPOLITAN RAILWAY: ELEVATION TO MARYLEBONE ROAD.
W. WILLOX, M.I.C.E., CHIEF ENGINEER; CHAS. W. CLARK, A.R.I.B.A., P.A.S.I., ARCHITECT; O. G. C. DRURY, A.M.I.C.E., RESIDENT ENGINEER.

The principal dimensions of this building, which is to be constructed entirely in reinforced concrete, are as follows:—Total length of front elevation, 140 ft.; height from foundations to roof, about 80 ft.; two wings of back portion, 111 ft. by 38 ft., and 100 ft. by 43 ft., respectively; the smaller wing being connected to the booking hall of the new station by a footbridge 82 ft. in span, 10 ft. wide, and 15 ft. high. The walls of the building are to be in reinforced concrete 6 ins. thick, the principal elevation to be faced with brickwork and faience; the design being in a free classic manner suitable to the materials. The building will comprise lower basement, booking-hall floor, ground floor, first, second, and third floors, and a flat roof.

(2) Improvements.—The arrangements of a bath and lavatory basin directly available from each bedroom. The discriminate use of folding doors. The employment of double walls, affording even temperature. The centralisation of the heating system. Methods employed to conserve waste water for garden purposes. The great development in thin, light, cheap and sound-proof partitioning. The designing of details to avoid lodgement of dust.

In addition to the foregoing, the following may be quoted: Sir Arthur Pinero congratulates the sanitary engineer as being responsible for the best modern improvement in houses. Hall Caine says: "Architects are as important as doctors to the health of a nation." Mr. Robertson Scott says: "The fundamental fault is that houses which are to be lived in most of the time by women, and are wholly worked by women, are planned by men who are chiefly single men." Sir Frederick Treves says: "England's worst feature is the typical suburb, whose streets have one feature only—namely, 'ugliness.'" He comments adversely on the usual bad conditions under which domestic servants live. W. W. Jacobs says, with characteristic humour: "All I know is that the average house is hideously ugly, both inside and out, and that people, generally speaking, like them."

Mr. H. G. Wells, in his novel "Kipps," has a good deal to say with regard to the modern house. He says that "Houses to-day are built on the ground of monstrously rich and shabbily extortionate land owners by parsimonious greedy people in a mood of elbowing competition." As a consequence, there are very few nice little houses. The plans are invariably inconvenient; floor boards yawn open, and are too splintery to scrub; and there are acres of stone steps to clean.

Mr. Fraser, while giving the foregoing as the prevailing public opinion on matters of domestic architecture, desired to disassociate himself from many of the views put forward. He then summarised the acknowledged essentials of the well-planned house, and proceeded to deal with lighting, sanitation, by-law requirements, etc. Afterwards he proceeded to treat of the subjects indicated by the following headings:—

Materials of Construction.

The great modern defect of house-building is the use of a heterogeneous mixture of materials brought from great distances at considerable cost merely to obtain outward effect. There is no doubt that the hidden charm of most old buildings lies in their fitness and right to be where they are. When one meets with a house costing, say, £800 to £1,000, it is obvious that no money should have been wasted in extravagances. It therefore jars unpleasantly on the senses to find a red brick plinth with a cement skirting, a stone cap to the plinth, rough-cast walls with stone dressings, the front gable half-timbered, the side gable tiled and the back gable filled in with elmboards, window-sills of Austrian oak, the beam across the bay window a rolled steel joist covered in plaster, pitch-pine balusters, mahogany handrail, European pine for the ceiling rafters, Persian tiles for the fireplace, French enamel on the joinery, a Yankee stove in the hall, and the roof covered with stone slabs, and so forth, *ad nauseam*. This is no exaggeration; it may be met with in a more or less

marked degree in the majority of small modern houses. The extraordinarily fine effects which can be obtained from local materials he showed by means of lantern slides

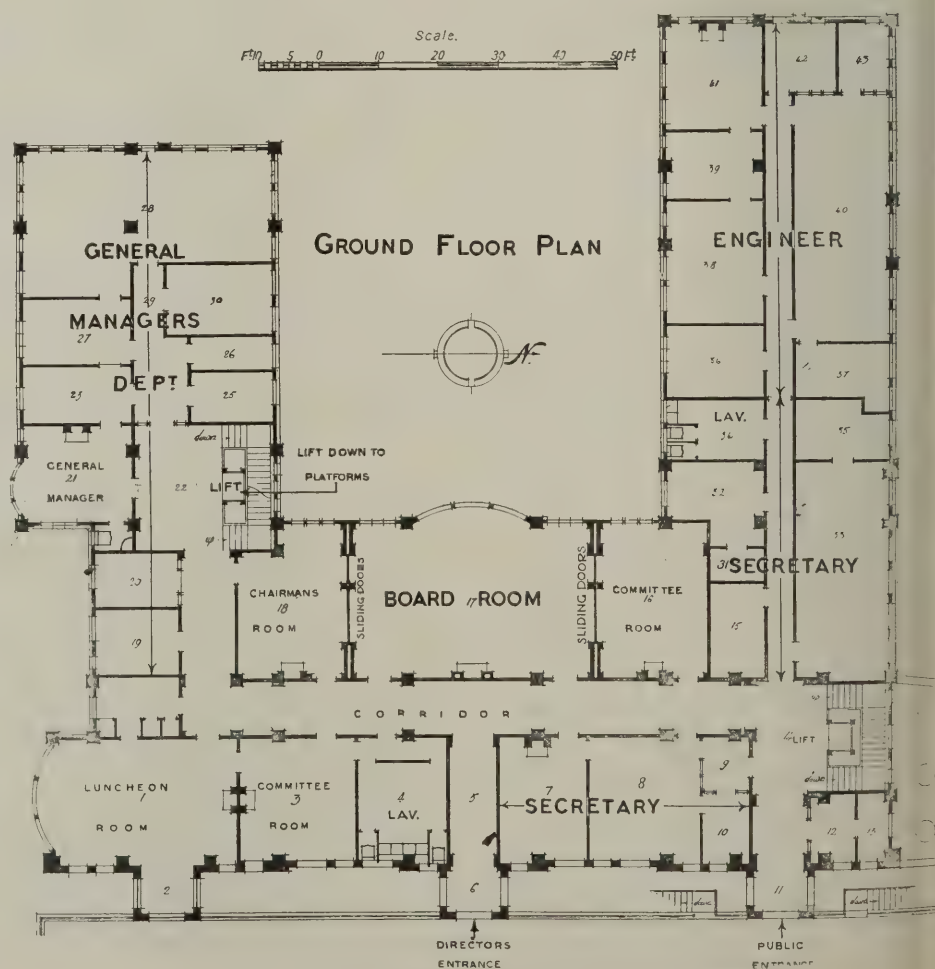
Site, Prospect, and Aspect.

The question of aspect and prospect is inseparably bound up with the selection of the site. The general public have much to learn with regard to these comparatively simple questions. It must be remembered that unless extraordinary precautions are taken, a house will draw up from the ground all gases which are near the surface, and in the many cases where no protection is afforded by covering the site with concrete or other means taken, cholera, dysentery, typhoid, and other dangerous complaints have been prevalent. Dampness is drawn from the soil by the warmth of the building. It is obvious, then, that a site should be chosen which is likely to be free from exhalations of dangerous gases, and where the ground water is at a low level or the soil light. Statistics show beyond question that the drier the soil the less prevalent is pulmonary consumption, a very common complaint. London consists in a large measure of sites which have been filled up several feet to bring to a convenient building level. Filling-up material may either be clean soil or town refuse, but in both cases will contain organic matter. The dangerous properties of such filling-up material need not be expatiated on, therefore avoid made-ground, clay soils, and low-lying or damply situated sites. The ideal site is on a gentle slope facing nearly due south-west by south, with trees a fair distance. The house should be towards the highest part of the

slope, to be away from the valley mists, but not so high as to be exposed to prevailing winds. In choosing a site which may be well wooded, do not hew down trees without careful consideration. Endeavour to find a spot which will permit of as little of this savage vandalism as possible. In theory it is bad to have trees around the house; but it is not so bad as faddists would have one believe. They protect from driving rains, and they must certainly add to one's sense of comfort, and are such a continual source of delight that the disadvantages are altogether insignificant in most cases. A north aspect is cold and damp. An east aspect is cold but dry. A south aspect is the most desirable, being warm, dry, and bright. The west is generally not cold, but wet and windy. Of two sites of equal merit, choose that which is not rectangular. Nothing gives one so unpleasant a sense of restraint as to be surrounded by four fences meeting each other at right angles, like a sheep-pen.

A beautiful house has a refining influence, and assuming that the architect is competent to turn out a sound design, his employer may rely on coming round in time to his architect's idea of what is beautiful.

The gardens should be planned at the same time as the house, so that trees can be planted as early as possible where they will protect the house and not encroach on its light and air. It is of great importance to settle the levels of the ground so that the house may not be in a hollow. If the garden is laid out in due time, prospects from the windows which are not quite happy may be ameliorated. Imagine the house in



METROPOLITAN RAILWAY OFFICES, BAKER STREET, W.

November, and do what you can to render the living rooms pleasant in outlook for the dreary months.

Planning.

The modern house is so complicated an undertaking that the very greatest and most minute consideration is required to harmonise all the elements and crystallise them into a simple and obvious plan, and the smaller the house the greater difficulty it presents. A really convenient plan is worth a vast amount of trouble. Supposing a house is so inconveniently planned that an extra maidservant is required, this means an increase on the annual expenditure of about £60, representing a capital of, say, £1,000.

Dark kitchen offices will be dirty, and you will not be able to see the dirt, which makes matters worse for everybody. Do not condemn your servants to live in underground dungeons. Your work and wage bill will suffer, for supervision becomes arduous. Remember that to walk upstairs 10 ft. from floor to floor requires as much energy as to walk 200 ft. on the flat. Working on the reasonable assumption that a housemaid living in the basement has to make thirty journeys per day to the ground floor, this is equivalent to about a mile's walk on the flat, to say nothing of the extra strain occasioned by the violent exercise.

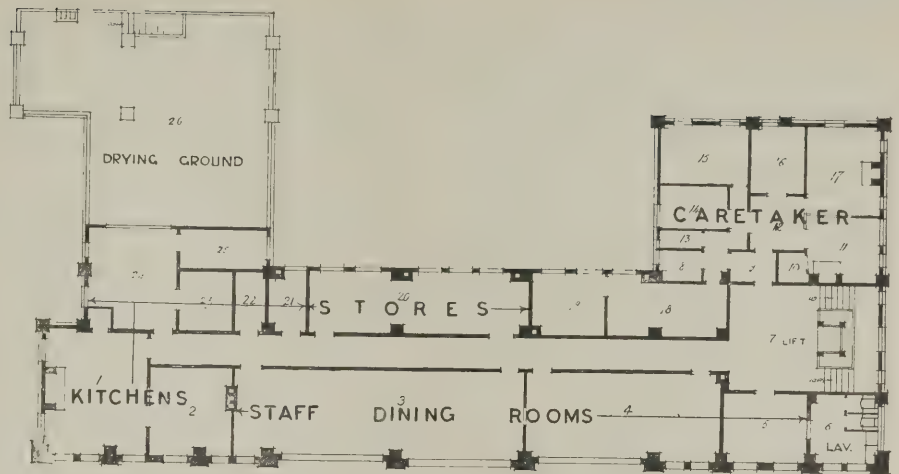
The English nation are peculiarly a home-loving people, fond of seclusion and independence. Some decent deference is due to the occupants of the adjoining site when one builds a house. Care should therefore be taken not to overlook your neighbour if this can be reasonably avoided.

A really good plan can only be evolved by the intelligent co-operation of the owner and the architect, and before this is settled on, the furniture should be imagined in position in the rooms; and it is astonishing what material alterations this will sometimes entail for a conscientious designer. An architect should be indulgent to his client's fads. It is said that all comfortable people have fads, but a sensible architect will take it for granted that his fads are entirely his own business and should not be forced on his clients.

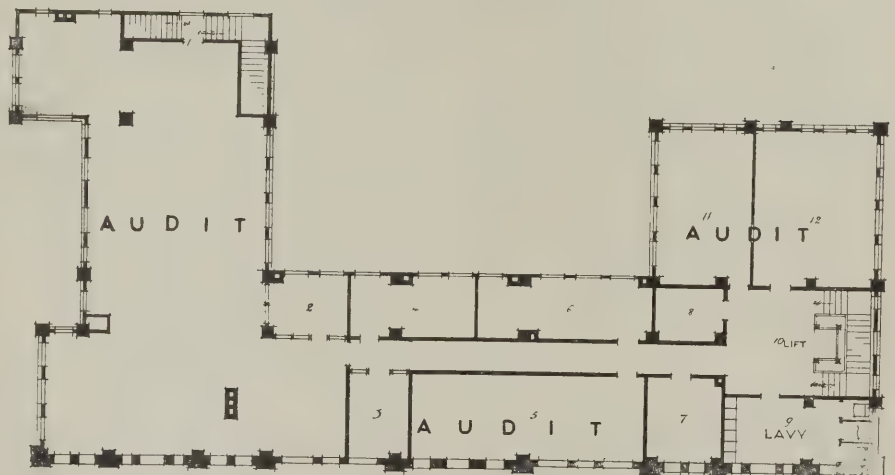
The kitchen range and scullery fittings should in no circumstances be cheap, and they should be well arranged. The preparation of food is a most important function, and every facility should be afforded to acquire good results. It cannot be expected that foods can remain sound and healthy when stored in improper places. The cook cannot maintain a proper standard if the kitchen and scullery equipment is defective.

The building owner who prefers a lavishly decorated drawing room to well-equipped kitchen offices is vitally injuring himself, and is laying out his money to bad advantage. The kitchen and scullery should both be adequately ventilated at the ceiling level. The earthenware utensils of the kitchen are best leadless glazed. Meat dripping, for instance, will dissolve the glaze on lead-glazed utensils, and has been frequently known to set up mild forms of lead poisoning.

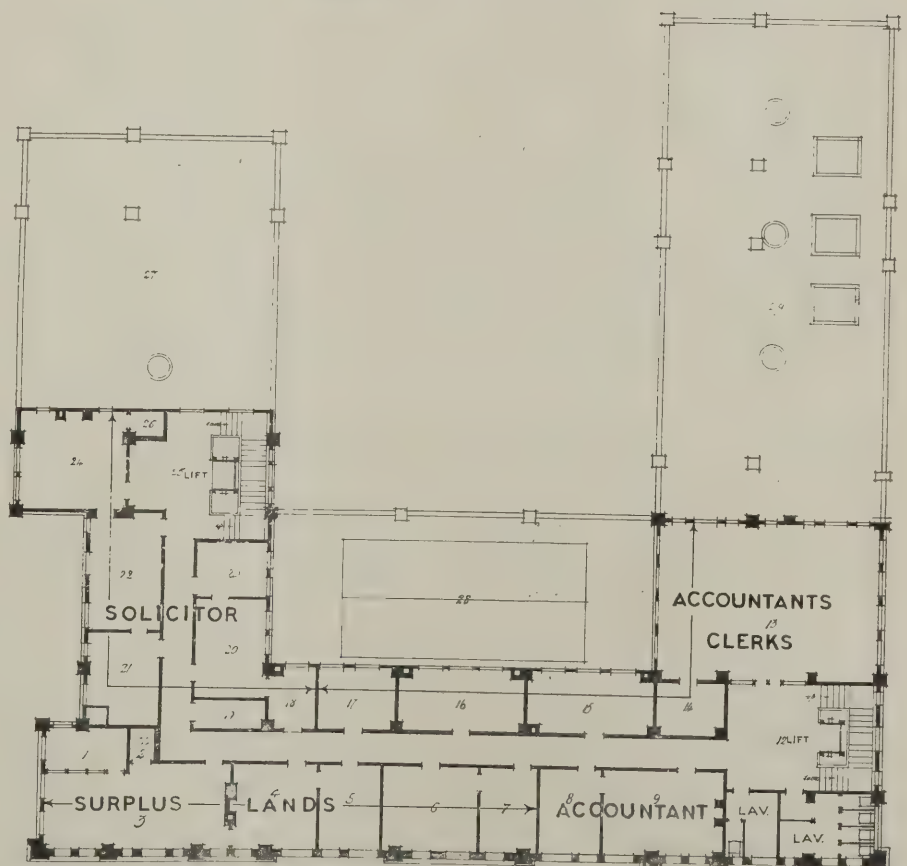
With regard to general construction, it seems superfluous to say that the whole of the materials throughout should be of ample strength, but it is very rarely that one finds a house which gives a com-



THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

METROPOLITAN RAILWAY OFFICES, BAKER STREET, W.

fortable sense of solidity. The size of the floor joists may be sufficient to carry the superimposed weight, but unless there is an ample margin of strength such a floor will always creak and vibrate; it will be noisy, and the ceilings below will show unsightly cracks.

Thin walls are a prolific cause of coldness, dampness, and ill-health. The minimum thickness in this country should be fourteen inches, and the best arrangement is to construct the walls in two thicknesses with an air-space between. It has been demonstrated to be possible to blow out a candle through an ordinary 9-in. wall, thus proving the extreme porosity of brickwork. The cheap brick will absorb water to such an extent that the average ten-roomed house could absorb as much as 10,000 gallons of water. The application of plaster or rough-cast or plaster to the outside is not quite efficacious, although it is of considerable help. The effect of thin walls is to chill and moisten the air of the interior. This will result in the occupants blocking up the means of ventilation in order to obtain warmth.

The paper concluded with some observations on general hygiene, and on the care and upkeep of the house. The discussion which ensued did not bring out any fresh points of importance.

LABOUR UNREST IN THE BUILDING TRADE.

The dispute which arose between masters and men in the London building industry towards the close of last year still remains unsettled. The Amalgamated Society of Carpenters and Joiners, representing several branches of the trade, sent in their notices in December last. As this union has to give six months' notice of a desire to terminate an agreement with their employers, these notices will take effect on June 8th, if an arrangement is not come to before then. The matters in dispute are the rates of wages and the hours of work. Wages, the men's representatives state, were settled at 10½d. an hour in 1900, and there had been no increase since then, although the cost of living had increased enormously. Consequently the workmen are now asking that they should be paid 1s. an hour. They are also asking for a reduction of summer hours of working, and for double pay for overtime. At present the working hours were fifty a week, and they are asking that it shall be reduced to forty-seven. The men are arranging a mass meeting to take place in Trafalgar Square on May 5th.

About 15,000 carpenters in Chicago have struck for increased wages, and building operations to the value of £7,000,000 are affected. The union carpenters of Des Moines (Iowa) have also ceased work, and the movement threatens to spread.

Demands by the workmen of Cardiff are under consideration by a committee of the Master Builders' Association. The carpenters are asking for a penny an hour increase in wages, that the finishing time on Saturdays be 12 o'clock instead of 1, and that the day just before and after Christmas commence at 7.30 a.m. instead of 8 a.m., and that breakfast be taken during the work day. The masons are also asking for an increase in wages, and demands by all sections of the trade are being made on similar lines.

PROFESSIONAL PRACTICE, AND A SUGGESTED CODE OF ETHICS.*

BY C. McARTHUR BUTLER, F.C.I.S.

Mr. McArthur Butler's suggestions for a code of ethics for architects were avowedly drawn up with the object of eliciting opinion and promoting discussion on the subject, and should obviously be read in that light.

FOR some time the Council of the Society of Architects have had under consideration the question of drafting a Code of Ethics relating to matters of professional etiquette in the architectural profession, and it was thought the importance of the subject warranted its being brought before the members with the view of eliciting opinion thereon, and if possible, of formulating some basis on which further action might be taken by Council of the Society.

In going into the matter Mr. Butler found that the information then in his possession regarding the question in relation to professions generally was inadequate to enable him to deal usefully with the subject, and therefore, as a first step, he approached some fifty societies connected chiefly with architecture, engineering, and the allied professions at home and abroad, but including also a few institutions representative of other callings.

Custom in Other Professions.

I need only refer in passing to the professional etiquette prevailing in such professions as those of Law and Medicine, the code applying to the latter being probably one of the most stringent, so much so that from a perusal of letters in the public press, one is led to think that the line may sometimes be drawn to an extent which might appear to amount to an injustice in certain cases. Among the numerous institutions representing the engineering, surveying, and allied professions in the United Kingdom, the only one, so far as I am aware, which has a code of ethics as well as by-laws, is the Institution of Civil Engineers, whose procedure in this respect is being closely followed by the Institution of Electrical Engineers, and by the newly formed Association of Consulting Engineers. I understand that the American Engineering Institutes adopt similar methods.

The opinion has been expressed that in some cases, as, for instance, where an institution is called upon to act in a judicial capacity in dealing with complaints regarding professional etiquette or misconduct, a code might limit and hamper that institution in the performance of these duties, but the general feeling appears to be in favour of a code.

The Attitude of Architectural Societies.

The American Institute of Architects offers to its members advice relating to the principles of professional practice, and puts forward a canon of ethics. The architectural institutions of Australia are co-operating in compiling a code, while the one issued by the Central Society of French Architects, has been adopted by other French architectural societies. In South Africa, similar measures are being adopted by the various associations of architects, following the successful efforts which have been made in that country in regard to the registration of architects, a matter in which the Society of Architects, through its South African branch, played no inconsiderable part.

*Extracts from a paper read before the Society of Architects, April 11th.

In Canada, the Royal Architectural Institute of Canada and other associations of architects, which are rapidly springing up in that progressive dominion, have each their code of ethics, administered in most instances, I believe, under an Act of Parliament.

Suggestions for a Remedy.

In my opinion, the desirability in principle for a schedule of principles of practice, and a code of ethics, is admitted, and what is good for the societies concerned may be held to be good for the profession generally.

Here, however, we are faced at once with the difficulty of dealing with that considerable body of architects outside any architectural society, who possibly could not be expected and certainly could not be obliged to adhere to any general schedule or code, nor against whom could such a code be enforced in the absence of any controlling body representing the whole of the profession and vested with statutory powers.

A Board of Professional Control.

In the absence of, or in the anticipation of, such a controlling body as would be constituted under a Registration Act, I suggest the immediate formation, by agreement between the architectural societies, of a Board of Professional Control, representing every architectural society in the United Kingdom in such proportion as may be arranged.

This Board would have no power to interfere in the domestic policy or procedure of the societies concerned, but would act after due deliberation, with the weight of combined authority, on any questions of public or professional interests, and might also act as an appeal or advice court if required to do so by any architectural society in regard to any question affecting that particular society.

By this means pressure could be brought to bear both on public bodies and members of the profession, much more efficiently than under the present system, while it would be very difficult and highly undesirable for even the unattached architect to ignore the fiat of a body so constituted; indeed, in my opinion, one effect of the formation of such a body would be to encourage those outside to come into one or other of the societies.

SUGGESTIONS AS TO SOME MAIN PRINCIPLES TO BE OBSERVED IN ARCHITECTURAL PRACTICE.

The Architect in Relation to his Client.

(1) *Status.*—The architect's relation to his client throughout the entire course of his services is primarily that of a professional advisor, but an additional relation is created when the architect is made the interpreter of a contract between his client and a contractor, though the fact that the architect is paid by the client does not invalidate his obligation to act with impartiality.

(2) *Drawings and Estimates.*—The architect provides preliminary drawings and estimates when required, but if an unconditional limit of cost is imposed before the contract drawings are prepared, he must be free to make such variations from the preliminary plans as may be necessary. It is desirable in regard to works of any importance that a specific agreement be come to with the client before the signing of the contract, regarding the ownership of the drawings and other documents or the supply of a duplicate set, at the expiration of the work.

The architect should not by bond or otherwise guarantee an estimate or contract.

(3) *Superintendence.*—On all work except the simplest, it is to the interest of the client to employ a superintendent or clerk of the works, and in certain cases to retain also the services of experts. These persons, although paid by the client, should be selected by the architect under whose direction they are to work.

(4) *Charges.*—The schedule of charges as approved by the Board of Professional Control is to be the minimum of payment to the architect, and as circumstances may justify a higher charge it is desirable that the charges be agreed between the parties before the work is put in hand.

The architect may not compete in regard to fees, or undercut to secure work.

(5) *Payments.*—The architect shall not be the medium of payment made on behalf of his client except by special agreement, but shall only issue certificates or recommendations for payment by his client.

(6) *Expert and Honorary Services.*—The architect, when retained as an expert, should receive payment proportionate to the responsibility and difficulty involved. Experts should not knowingly name prices in competition with each other.

The architect should not perform work in an honorary capacity except for charitable purposes approved by the Board of Professional Control.

(7) *Tenders.*—In advising that none but trustworthy bidders be invited, and that the contract be given only to persons who are reliable and competent, the architect protects the interest of his client.

THE ARCHITECT IN RELATION TO THE CONTRACTOR.

(8) *Contractors and Craftsmen.*—As the architect decides whether or not the intent of his plans and specifications is properly carried out, he should see that these documents are complete and accurate, and should not call upon the contractor to make good oversights or errors in them, or attempt to shirk responsibility by permitting indefinite clauses in the contract or specifications.

While he must condemn bad work, he should commend good work, and intelligent initiative on the part of craftsmen and other workmen should be recognised and encouraged.

THE ARCHITECT IN RELATION TO THE PROFESSION.

(9) *Building Trades.*—The architect should not directly or indirectly engage in any of the building trades, nor be a party to any building contract except as owner. If he has any financial interest in any building material or device he should not specify or use it without the knowledge and approval of his client.

(10) *Offering Services.*—The seeking out of a possible client and the offering to him of professional services on approval and without compensation, unless warranted by personal or previous business relations, tends to lower the dignity and standing of the profession and is to be condemned.

(11) *Advertising.*—Advertising tends to lower the dignity of the profession, and is therefore condemned, as is the display of the architect's name upon a building under construction, but the unobtrusive signature of buildings after completion is approved by the Board of Professional Control.

The use of initials designating membership in any architectural or similar society is proper in connection with any professional service, and is to be encouraged as helping to make known the nature of the honour they imply.

(12) *Competitions.*—The Architect should not take any part in a competition unless it be conducted according to the best practice and usage of the profession as formulated by the Board of Professional Control. Except as an authorised competitor he may not attempt to secure work for which a competition has been instituted. He may not attempt to influence the award in a competition in which he has submitted drawings. He may not accept the commission to do the work for which a competition has been instituted, if he has acted in an advisory capacity either in drawing up the programme or in making the award. He shall not submit any drawings in any competitions, other than those designed and prepared under his personal supervision, nor attempt to secure any work for which a competition remains undecided.

(13) *Injuring Others.*—The architect should not falsely or maliciously injure, directly or indirectly, the professional reputation, prospects, or business of a fellow architect, nor criticise in the public Press the professional conduct or work of another architect, except over his own name.

(14) *Supplanting Others.*—The architect should not undertake a commission while the claim for compensation or damages or both of an architect previously employed and whose employment has been terminated remains unsatisfied, unless such claim has been referred to arbitration or issue has been joined at law; or unless the architect previously employed neglects to press his claim legally; nor should he attempt to supplant a fellow architect after definite steps have been taken toward his employment.

(15) *Membership in Societies.*—As it is only by co-operation and by the personal interchange of views and opinions that the profession can as a body exercise an influence on the art and on public opinion, and its members be brought into better relations the one with the other and with one another, an architect should qualify for and join and encourage his subordinates to do so, any local architectural society and also and in any case, one or other of the larger and more representative societies, and should take an intelligent and active interest and part in their proceedings.

Should such a course not appeal to him from a personal viewpoint he should look at it from another, that of joining a society not for what he can get out of it, but for what he can put into it, for the general good.

(16) *Duties to Pupils.*—As the qualifications for the practice of architecture should

be based on general education as well as on technical and professional training, the architect should so advise intending students, and give pupils and assistants every facility and encouragement to avail themselves of educational facilities, and support to the best of his ability all recognised architectural educational bodies and professional societies.

The architect should not undertake the training of a pupil, nor take more than one pupil at a time, unless he has the proper facilities, scope, and opportunities for giving him, or them, personal oversight and instruction.

THE ARCHITECT IN RELATION TO THE PUBLIC.

(17) *The Public and Building Authorities.*—The architect should be mindful of the public welfare and of his duties as a citizen, and should participate particularly in those movements for public betterment in which his special training and experience qualify him to act. He should not, even under his client's instructions, engage in or encourage any practice contrary to law or hostile to the public interest, for as he is not obliged to accept a given piece of work, he cannot by urging that he has but followed his client's instructions escape the condemnation attaching to his acts.

The architect should support all public officials who have charge of building in the rightful performance of their legal duties. He should carefully comply with all building laws and regulations, and if any such appear to him unwise or unfair he should endeavour to have them altered.

(18) *Professional Qualifications.*—The public has the right to expect that he who assumes the title of architect has the knowledge and ability needed for the proper conception, presentation, and supervision of all building operations which he may undertake.

Suggestions for a Code of Ethics, the violation of any items of which should constitute unprofessional conduct.

The following items are suggested as a guide, but their enumeration should not be construed as a denial of the existence of others equally important; and just as the several items indicate offences of varying degrees of gravity, so the penalty for infringement would involve warning, reprimand, expulsion, or such other punishment as the Board of Professional Control may at the time decide.

It is Unprofessional for an Architect—

(1) to engage directly or indirectly in any of the building trades, except as owner; (2) to guarantee an estimate or contract by bond or otherwise; (3) to accept any commission or substantial service from a contractor or from any interested party other than the client; (4) to advertise; (5) to take part in any competition the terms of which are not in harmony with the principles approved by the Board of Professional Control; (6) to attempt in any way, except as a duly authorised competitor, to secure work for which a competition is in progress; (7) to attempt to influence either directly or indirectly the award of a competition in which he is a competitor, or in which he is interested in any other capacity; (8) to accept the commission to do the work, either personally or by partnership, for which a competition has been instituted if he has acted in an advisory capacity either in drawing up the programme or in making the award; (9)

to injure falsely or maliciously, directly or indirectly, the professional reputation, prospects, or business of a fellow architect. (10) to undertake a commission while the claim for compensation or damage, or both, of an architect previously employed and whose claim has been referred to arbitration, or issue has been joined at law, or unless the architect previously employed neglects to press his claim legally; (11) To attempt to supplant a fellow architect after definite steps have been taken toward his employment; (12) to compete knowingly with a fellow architect for employment on the basis of professional charges; (13) to criticise in public print the professional work or conduct of another except over his own name; (14) to deviate from the scale of charges without permission of the Board of Professional Control.

General Observations.

There are five points in particular arising out of the proposed Schedule of Practice and Code of Ethics to which I would call attention: (a) the ownership of drawings; (b) scale of charges; (c) advertising; (d) competitions; (e) architectural societies; (f) public authorities.

In regard to (a), the ownership of drawings. The fact that an architect can be called upon to deliver up to a client all drawings and documents on completion of the work and payment of fees, in the absence of any express agreement to the contrary, renders it desirable in my opinion to consider the question of endeavouring to get the decision in "*Gibbon v. Pease*" reversed, and in the meantime, in works of any importance, for the architect to arrange procedure with the client previously.

In regard to (b), the scale of charges. The fact that the only authority and recognition which this scale has is based on custom renders it desirable in my opinion from this point of view to hasten an Act of Parliament under which such a scale would be legalised. On the question of the scale generally, I am of opinion that in the architectural profession payment by commission on the cost of the building is wrong in principle if not immoral, as it is exceedingly difficult to get away from the fact that the architect benefits materially in proportion to the amount spent by the client, though he may and does in the interest of his client, make every endeavour to keep within the limit laid down. The architect should not in my opinion be placed in a position where it may be inferred that his personal interests are likely to clash with those of his client. Again, a minimum scale is not unlikely to be considered or to become a maximum one also. I have no practical proposal to make at present for the redrafting of the scale as it now exists; but it has been suggested to me, why have a scale at all, why should not architects, like other artists, adjust their charges in accordance with what they can command for their services?

In regard to (c), advertising. It all depends on the interpretation and definition of the term, which I take it is intended to mean when applied to architects, that they should not employ commercial methods of making themselves and their work known to the public, that is to say by direct advertising.

As to indirect advertising, an architect, like any other professional man with any considerable practice, can hardly avoid it. His name is constantly brought before the public in the professional journals and by the technical papers, by the books or papers he publishes, to say nothing of his name and address on

announcements on sites for public buildings, for which publicity if he sought it through the usual channels he would have in many cases to pay a heavy charge.

In regard to (d), competitions. It has been urged upon me with considerable force and frequency by members of the Royal Institute as well as others, that the restrictions very properly laid down by the R.I.B.A., and endorsed by the Society, should not altogether apply to small local or limited competitions. The reason for instance that an assessor is not always appointed is not invariably that the persons concerned do not agree in principle to such a course, but is sometimes due to the financial margin being so small that it will not justify the considerable expense involved in the appointment of an assessor, and if the local architects concerned are satisfied and willing to compete on the terms laid down by the promoters, it is suggested they should not be unduly penalised, under the present conditions prevailing in the profession, where if an architect is loyal to his society and refrains from competing, he leaves the field open to others who for reasons previously stated are under no control or obligation.

In regard to (e), architectural societies. One has to allow for human nature, which in this case usually takes the form of joining a society for personal benefit and making use of it for one's personal ends, though I am bound to say from experience that the other point of view has occasionally prevailed, the possibility of there being any other than the personal view not having previously occurred to the person concerned. I may here say that in the Dominion of Canada membership in local associations of architects is compulsory by law on those who desire to use the title of architect.

In regard to (f), public authorities. The architect sometimes finds himself hampered with the requirements of by-laws and building regulations, or of those of the officials whose duty it is to administer them, but his efforts will of course be directed to complying with the requirements of lawfully constituted authority, and to find a remedy for his grievances (if any), not in endeavouring to evade but to amend those regulations which appear to him to be irksome and unnecessary.

It only remains for me to say that the opinions I have expressed are personal to myself, and are put forward for the purpose of eliciting criticisms or suggestions, and only to the extent to which they may subsequently be endorsed by those concerned must they be taken as representing the views of the Council or of the Society of Architects.

TEMPERATURE REGULATION IN BUILDINGS.

In a paper on "Automatic Temperature Regulation" read before the Institution of Heating and Ventilating Engineers by Mr. Herbert A. Jones, the author remarked that in this country the question of automatic temperature regulation had up till quite recently failed to arouse interest on the part of owners of buildings, their architects or consulting engineers, although such systems were in extensive use in the United States, Canada, and other countries, and were there regarded as just as much a necessity in the equipment of a building as the heating system itself. Automatic control was just as

much a necessity and as desirable here, in spite of the fact that we did not get great variations of outside temperature. Those who had been in the United States and Canada had probably been struck with the comparative comfort with which they could withstand the extreme cold of the winters; this was due to the dryness of the air. On the other hand, they had all met the American who complained that he could not keep warm here in winter. These experiences were proof that small extremes of temperature in a climate that had large extremes in humidity, or variations in the amount of moisture in the air, were possibly more uncomfortable to experience than great extremes of temperature where the humidity was more constant. As the atmospheric humidity of the United Kingdom was notoriously great and variable, and since this, with our average and uncertain variation of winter temperature, was thus proved to have such an effect on the comfort or otherwise of the community, the subject of automatic temperature regulation was worthy of the very careful consideration of all those concerned in the design and equipment of public buildings, schools, etc.

The subject of temperature regulation was frequently confounded with ventilation. The latter dealt with the supply of fresh air, while the former controlled the temperature and prevented the rooms of a building from becoming too hot or too cold. The advantages derived from temperature regulation were twofold:

(1) By keeping the temperature of a building (say a school) at, say, 60°, all waste of fuel was prevented, and consequently a considerable saving of money was effected. Hundreds of pounds had been wasted in a single school by overheating it and securing a cooler temperature by opening the windows. Every particle of excess heat which went out of the windows was an actual waste of money. If the outdoor temperature was 30° it would require 30° of heat to bring the schoolroom temperature up to 60°. If, however, the outdoor temperature was 50°, only 10° of heat were required to ensure the comfort of the schoolroom. A trustworthy system of temperature control would furnish the exact amount of heat required and avoid all excess consumption of fuel, and consequently save money.

(2) By keeping the class-rooms at an even temperature the health and comfort of teachers and pupils were promoted. A class-room that was too cold caused physical discomforts which might result in ill-health. A class-room that was too hot was even worse. The average teacher would resort to an open window for relief. The draughts from these windows were certain to bring on coughs and colds, which only too frequently ended in throat and pulmonary troubles. The cause of education was as much promoted by hygienic surroundings and physical comfort of pupils as by teachers and textbooks. Hence automatic temperature regulation for schools was becoming regarded by the highest experts in this country as a necessity.

In the concluding part of the paper the author gave a brief description of several systems which could properly be described as attempting to give temperature regulation. The requirement was an apparatus which, fixed in the position where it got an average temperature, was affected by the same, and controlled some distantly placed valve or other mechanism through which the source of heat passed.



THE APSE OF THE MADELEINE, PARIS.



DRAWN BY A. C. CONRADE.

THE HALLS OF THE CITY COMPANIES.

In the "City of London Year Book and Civic Directory" (London: W. H. and L. Collingridge, Aldersgate Street, E.C.), there is a concise account of each of the City Companies. Each company has its hall; and as these buildings usually possess considerable architectural interest, it will be useful to extract a few particulars of some of the more important of them from this directory, supplementing the details, here and there, with information from other sources. The companies are taken in alphabetical order.

The hall of the Society of Apothecaries was founded in 1623, and the building was destroyed in the Great Fire of 1666. The present building was erected in 1670-6. It is in Water Lane, Blackfriars, and reputedly occupies the site of the theatre that was jointly owned by Shakespeare and Burbage.

The Armourers and Brasiers' Company's hall is at 81, Coleman Street. The old hall was built by W. Creswell; the architect of the present hall, which was built in 1839-40, was Mr. Joseph Henry Good.

J. Elmes renovated the hall of the Bakers' Company, 16, Harp Lane, Great Tower Street, which was built, after the Great Fire of 1666, on the site of the ancient residence of John Chichley, Chamberlain of London.

Inigo Jones built, in 1636, the ancient hall and theatre of anatomy of the Barbers' Company, in Monkwell Street, Falcon Square. The hall was rebuilt in 1668, after destruction in the Great Fire, when, however, the theatre was saved, but it was taken down in 1783. The court room and entrance gateway of the old hall remain, the rest having been taken down in 1863-4.

Nothing is recorded about the Brewers' Company's Hall in Adde Street, except that it was rebuilt in 1666.

The original hall of the Carpenters' Company, in London Wall, was built in 1429, and was enlarged in 1664-5, escaped the Great Fire, and was repaired in 1670-1. The present hall was built in 1879. Samuel Angell designed the hall of the Clothworkers' Company, 41, Mincing Lane, which was built in 1856-9, and opened by Prince Albert in 1860. The hall erected in 1598 was partly destroyed by the Great Fire.

The Coach-makers and Coach-harness Makers' Company have their hall in Noble Street, Cheapside. It was built in 1870 in succession to a hall that had been rebuilt in 1811, on the site of the Scriveners' Hall, which had been purchased in 1703. The site was first occupied by the residence of Sir Nicholas Bacon, prior to his becoming the first Lord Keeper.

The Coopers' Company's Hall, No. 71, Basinghall Street, was built in 1868 from designs by George Barnes Williams, on part of the site of the hall which, dating from 1543, was destroyed in the Great Fire, and succeeded by Woodhouse's hall.

Mr. Chatfield Clarke's designs for the hall of the Cordwainers' Company, 7, Cannon Street, began to take shape in December, 1909, when the foundation stone was laid. It is the sixth hall built upon the same site, the first having been built in or about 1393.

Messrs. J. and J. Belcher built the hall of the Curriers' Company, 6, London Wall, the first stone of which was laid on December, 1874. The style is of Northern French Gothic type. There is an open timber roof, divided into panels,

with carved bosses at the intersections; and another fine internal feature is a large stone fireplace, about 16 ft. high, with the arms of the company in the centre of a carved canopy.

The Cutlers' Hall, in Warwick Lane, is noteworthy for its fine external frieze in terra-cotta showing the operations of the craft.

Thomas Cromwell, Earl of Essex, had a house and gardens in Throgmorton Street, and after his attainder the mansion and site were acquired, in 1541, from Henry VIII. The building was much damaged by the Great Fire, and re-edified next year from the designs of Jarman, the architect of the second Royal Exchange. W. Goodal repaired it, in 1775, after a fire in 1774; and after being twice refronted successively by Robert Adams and (in 1868-9) by Mr. Herbert Williams, it was altered in 1898-9 by Mr. T. G. Jackson, R.A.

The Dyers' Company's hall, 10, Dowgate Hill, was erected about 1776.

Fishmongers' Hall, London Bridge, was built from the designs of H. Roberts, 1831-5; the hall it succeeded having been built by Jarman after the Great Fire, which had destroyed the fifteenth-century hall in Thames Street.

The hall of the Girdlers' Company, 39, Basinghall Street, was built in 1681.

Philip Hardwick, R.A., designed the hall of the Goldsmiths' Company, in Foster Lane, Cheapside, which was opened in 1835. It succeeded a hall which, built in 1407, was damaged by the fire of 1666 and restored in 1669.

Wren designed, in 1668-70, the hall of the Haberdashers' Company, 31, Gresham Street, the Great Fire having destroyed a hall that was bequeathed to the company in 1478. In 1864 it was necessary to restore Wren's building after serious damage by fire.

The old hall of the Ironmongers' Company, in Fenchurch Street, existed in 1494, was rebuilt in 1587, escaped the Great Fire, and was demolished to make room for the present hall, which was built from the designs of T. Holden, and opened in 1750. The interior was remodelled in 1847.

A characteristic specimen of the enriched decoration employed after the Great Fire is found in the facade of the Mercers' Hall and Chapel, 87, Cheapside, which was erected from the designs of Mr. Jarman, in 1682, the preceding hall having been burnt in the Great Fire.

The largest of the halls of the City Companies is that of the Merchant Taylors, 30, Threadneedle Street. It was built, after the Great Fire, by the ubiquitous Jarman.

The Stationers' Company's hall off Ludgate Hill was mainly built immediately after the Great Fire. It was faced with Portland stone by Robert Mylne in 1805; and his grandson, Robert William Mylne, added, in 1887, the modern building at the north-east end. The old hall has a remarkable series of stained-glass windows.

Wren is supposed to have designed the hall of the Tallowchandlers, on Dowgate Hill, which was built in 1672, and restored in 1871 and 1890. He built the hall of the Vintners, in Upper Thames Street, and the first meeting was held in it in 1871. The ancient hall, known to have been in existence in 1352, was burnt in the Great Fire.

It is a great pity that many of these halls are so obscurely situated as to be quite unknown to the average Londoner; and even when he comes upon one in some cramped alley, he is often unable to

identify it, except perhaps as "the hall of some City company," but which company is not always clearly evident. It would be an obvious advantage if they were all plainly labelled. The interiors, often architecturally interesting, and many of them rich in objects of artistic and historical interest, ought to be more accessible than they are; but the obscurantist attitude of some of their custodians may be inferred from a note in the "City of London Year Book," in which it is stated that "official information has, in a few instances, been refused."

OUR PLATE.

The Apse of the Madeleine, Paris.

The Church of the Madeleine, situated on the Place of the same name, opposite the Rue Royale, was begun in 1761 or 1764, by Constant d'Ivry. He died in 1777, and Couture altered the designs, building the south-west facade as now seen. Under Napoleon, the work was continued in 1808, when Vignon, the architect, was required to modify the designs with a view to making the building a Temple of Glory in honour of the Grande Armée. After 1814 the work was again delayed; and in 1816 Vignon, in again taking up the work, reverted to the intention of producing a parish church on the model of a Greek temple. Most of the elevation is to be credited to him; but, on his death, the interior was arranged by Huvé. The Madeleine was not finished and consecrated until 1842. It forms a parallelogram 102 metres long by 43 metres wide, and stands on a basement 4 metres high from the ground. Around it there are 52 fluted columns, 15 metres high. The pediment of the main facade is filled with a bas-relief by Lemaire, representing the Last Judgment.

The apse, as shown in our Centre Plate, which is reproduced from a drawing by Mr. A. C. Conrade, is formed by a semi-circle of Ionic columns, supporting a painted semi-dome. The imposing sculptures of the altar represent the Magdalen with adoring angels.

OBITUARY.

Mr. Thomas Robert Macquoid, R.I.

The death has taken place at The Edge, Lucien Road, Tooting Common, S.W., of Mr. Thomas Robert Macquoid, R.I., at the age of 92. He was the husband of Mrs. Katharine Sarah Macquoid the novelist, and the father of Mr. Percy Macquoid the artist. Mr. T. R. Macquoid was a member of the Institute of Painters in Water Colours, and was a frequent exhibitor. In 1850 he published a volume of Examples of Architectural Art in Italy and Spain chiefly in the 13th and 16th centuries, which he compiled in collaboration with Mr. J. B. Waring.

Mr. John Hogan, M.I.C.E.

Mr. John Podevin Lemon Hogan, M.I.C.E., who has died at the age of 59, had risen to a high position in the Indian Public Works Department. Trained at the Thomason Engineering College, Roorkee, Mr. Hogan was appointed to the Department in 1873. After some years of employment on military works he was transferred to the railway branch in 1880. Later his services were lent to the Bombay, Baroda, and Central India Railway Company. He became a superintending engineer in 1899, and from 1901 to 1907 he was Junior Consulting Engineer to the Government of India for Railways.

MAGAZINES AND REVIEWS.

In putting together our monthly notes on some of the contents of magazines and reviews, we notice that the "Art Journal," with which we have usually commenced, has not appeared since February. We hope this does not mean that this art-serial, with such a long and creditable history behind it, has come to an end.

The "Burlington Magazine" contains an article by Signor Rivoira (who seems far better acquainted with British architectural monuments than most Continental archæologists) on the ancient tower and chapel of St. Regulus, or St. Rule, at St. Andrews, which has been to some degree a bone of contention with archæologists. Signor Rivoira, who goes into the question in an article which is a model of careful research and reasoning, considers that the tower and chapel show constructive unity, but that the western tower arch (now built up), though identical in size and proportion with the chancel arch, is the result of an alteration of the original building, it being inconceivable that, in those days, so large a portal should have been made at a western entrance to the tower. But the alteration must have been close on the original building, as the style of detail is similar in each arch. He regards the whole as the work of Bishop Robert after his consecration in 1124, the western arch being rendered necessary by an extension (now destroyed) of the original design. The argument agrees well with the evidence of the building, of which photographs are given. A date of two or three centuries earlier has been claimed for the building, but we think Signor Rivoira has proved his thesis, or at least rendered it highly probable. The same issue contains an illustrated article on the Byzantine enamels in Mr. Pierpont Morgan's collection, which are said by the author (Mr. Dalton) to afford the best means of studying this type of Byzantine work as it existed between the tenth and thirteenth centuries. The coloured illustrations of these small (sometimes minute) works are beautifully produced, and in themselves give a value to the issue in which they appear.

The most interesting article in the New York "Architectural Record" is one on "A Study of Romanesque in Spain," a country which we do not generally think of in connection with Romanesque architecture. The illustrations given serve, however, to show that Romanesque architecture in Spain showed much the same forms as in other parts of Europe; we find again the familiar flat strips of buttress ending abruptly under the eaves; and the doorway at San Millan, Segovia, and the interior of old Salamanca cathedral, might just as well have happened in early twelfth century France. The writer of the article, Mr. Stapley, thinks that American architects would do well to pay a little more attention to Romanesque; many an excellent American architect, he says, thinks Romanesque such an unused type that he need gave it no attention, "and the schools skip over it like a hurdle." Mr. Stapley is right; the study of Romanesque, besides its great interest in regard to historical development, is a lesson in the value of solid and massive design of truly masonic character. "Early American Churches" are interesting from looking so very English. A paper on "A Pioneer Architect," Mr. F. Lloyd Wright, shows in the illustrations that Mr. Wright has some ideas of his own in regard to the plan and design of house

architecture. Among other things, he has sensible roofs, either flat or on a very slight slope. The days of the exaggerated "picturesque" high-pitched roof ought to be considered over, and we are glad to find any architect thinking so.

The "Gazette des Beaux-Arts" commenced in its March issue a series of articles on "The Works of the Louvre under Henri IV.," by M. Louis Batiffol, said to be founded on new documents. The April number of the "Gazette" has not appeared yet (French periodicals being quite indifferent as to punctuality of publication); the March article goes to show that the whole scheme of connecting the Louvre and the Tuileries as one great architectural group was due to the architect Lescot. In England we have been recently told that Lescot was little more than a name in the matter, and that his influence over the Louvre design was of the smallest. M. Batiffol's article, and the information produced and the documents quoted in it, seem to prove the contrary.

The "Contemporary Review" contains an article by Lady Ritchie on "Alfred Stevens," giving some information about the artist which is of interest; especially the fact that he was engaged by Messrs. Hoole and Co. in designing a number of things for practical use, such as hot-air stoves, etc., for the 1851 exhibition, and that the firm carried away every medal at the exhibition. This is probably rather too sweeping a statement; but it is evident that Stevens had the true great artist's capacity for treating anything that he laid his hand on in an artistic spirit. A characteristic story is that while Stevens was teacher in a Government school of design, one of the students said to him: "I sketched in the ornaments, sir"; to which Stevens replied: "We do not sketch here, we draw"; a good lesson in a few words. Stevens resigned the appointment in two years, "disgusted," he said, "by the meddlesome supervision of ignorant Government clerks." One can understand that; Stevens was hardly a man to "suffer fools gladly." In his entire devotion to art, and apparent indifference to every other subject, he was a good deal like an artist of the Italian Renaissance come to life again.

In the "Century" Mr. Karl Bodmer publishes "Recollections of Millet," which are of considerable interest, but we notice that all the illustrations are taken from his peasant pictures, and there is not a word about his earlier works of imaginative subjects, which are in an artistic sense finer, though there is not the same simple earnestness about them. There were two Millets, and people seem to have forgotten the earlier one entirely, and somewhat exaggerated the later. Everything about Millet himself is interesting—even more so than his pictures.

In "Blackwood" the writer of "Musings without Method" has something to say, quite truly, as to the dignity and style of Vandyck's portraits, but indulges in a grumble, not quite justifiable, against modern English portraiture, as presenting "a bare literal record of unsightliness." The costume of the present day has not the splendour of the Vandyck costume; we cannot help that; but to say that there are no modern portraits which give us anything more than the details of costume—none that are fine works of art in themselves—is the dictum of a writer who is either prejudiced or who never sees the Royal Academy exhibitions, or goes through

them with his eyes shut. Bad and dull portraits there are produced every year, but every year there are good ones; they generally outnumber the bad. In fact, if there is one branch of art in which English is stronger to-day than in others, it is exactly portraiture.

In "Scribner" an article on "Cadenabbia" gives occasion for a number of charming sketches by Mr. Peixotto of picturesque bits of town and country in this district of Italy.

CORRESPONDENCE.

Cheap Cottages.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I am inclined to think that "Clerk of Works," in your issue of April 10th, rather underestimates the capabilities of farm labourers, etc. In this district (Bedfordshire) men know how to do a good many other things besides farming, and several have, to my knowledge, built their own cottages—with a certain amount of help, of course. The result has been perfectly satisfactory.

Referring to the second point, I am afraid if a builder obtained skilled workers from away and paid them high wages in order to build cheap cottages his speculation would turn out somewhat unfortunate for himself. Such cottages are found on estates and so forth, where materials are to hand, and money no object, but not under ordinary circumstances.

If *builders* have to give up cottage building owing to increasing cost, it is obvious that something must be done to make it possible. Especially when the Planning Act is reducing the numbers. Besides, cottages are not meant to be built like mansions—they would lose their rustic appearance.

LICENTIATE R.I.B.A.

The Modern House.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to the notice, in your issue of the 3rd inst., on the paper I read entitled "The Modern House," I would like to point out that the "questions" were not asked by myself, but that I gleaned them from a publication issued by one of the Garden City Associations. I have not the document by me, but I have no doubt that all members of the profession received a copy of this circular.

I think you should have stated that I specifically disassociated myself from many of the views put forward; I am quite in agreement, however, with regard to the unsuitability of the large hall. I am acquainted with a great number of these, and do not know of one solitary case where this adjunct gives complete satisfaction in a small house. The objections to it are as follows:—

Lack of privacy; exposure to draughts; encroachment upon space which is better utilised in serviceable living-rooms, the improbability of comfortably warming same, and the impossibility of comfortably occupying a room into which any chance caller is liable to be incontinently admitted. All we require in this country for a hall is adequate space for a fireplace or a heating stove.

PERCIVAL M. FRASER.

[Extracts from Mr. Fraser's paper appear on p. 403.]

OPERATING THEATRES, BRADFORD.

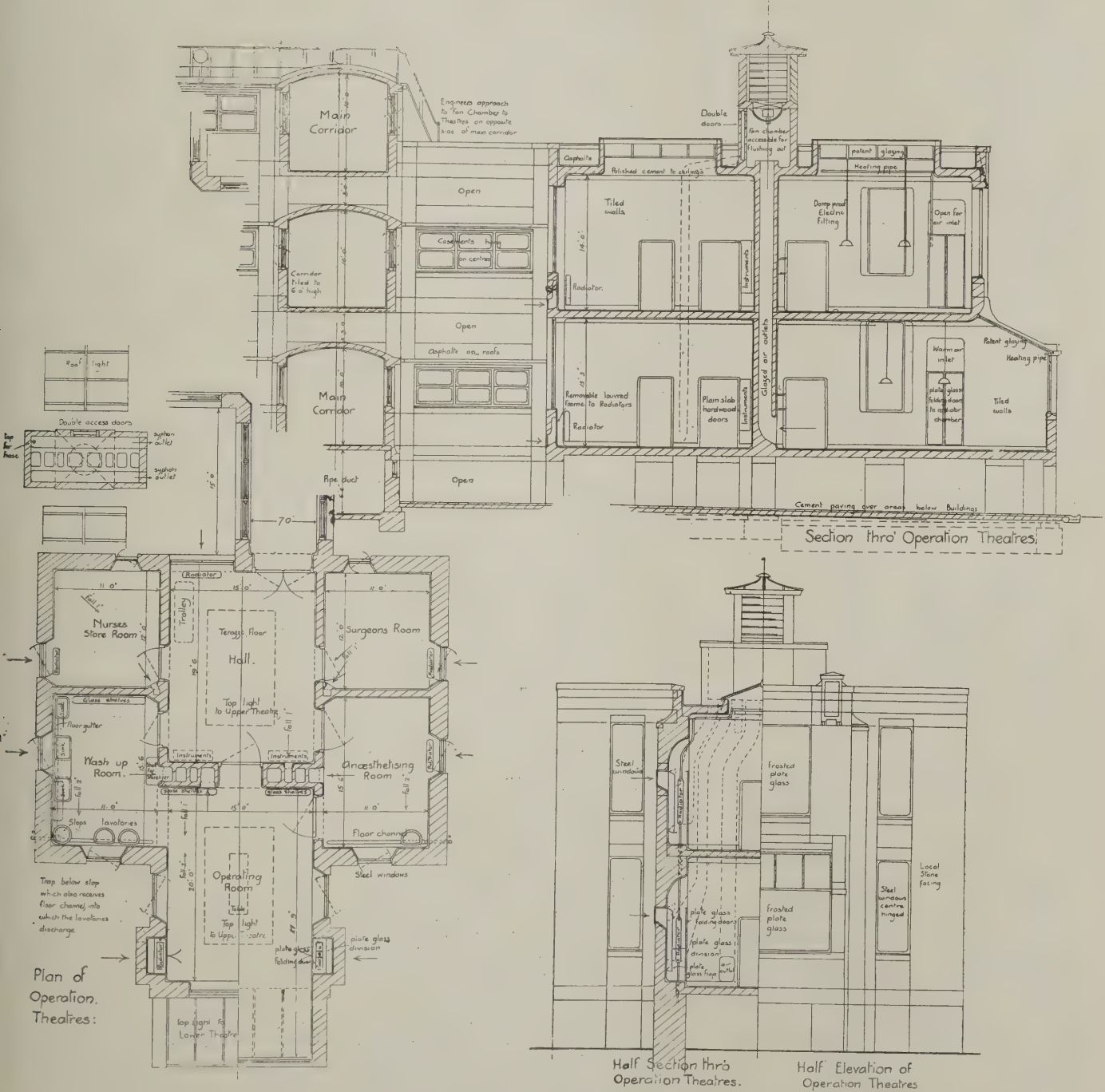
In this design provision is made for two operation rooms (the lower one being 416 sq. ft. in area, and the upper 300 sq. ft.), a sterilising and wash-up room 170 sq. ft. in area, anæsthetising room, surgeons' room, nurses' store-room, and a hall having a space near the entrance suitably arranged for the accommodation of trollies.

The theatre blocks are cut off from the main corridors of the infirmary by cross-ventilated lobbies. Heating and ventilation are provided by radiators fixed on brackets below the windows, except in the case of the operation rooms, which are arranged to be heated by coils fixed in recesses. Messrs. Everard, Son and Pick are the architects.

ROYAL SANITARY INSTITUTE CONGRESS.

The twenty-seventh Congress of the Royal Sanitary Institute is to be held at York from July 29th to August 3rd, during which period papers will be read on subjects relating to health and sanitary science. Those who desire to read papers at the Congress should forward their manuscript (which should not exceed 3,000 words) not later than June 29th, to the Secretary, Royal Sanitary Institute 90, Buckingham Palace Road, London, S.W.. No previously published paper can be accepted. The following sections will be represented at the Congress:— (a) Sanitary Science and Preventive Medicine; (b) Engineering and Architecture; (c) Domestic Hygiene; (d) Hygiene

of Infancy and Childhood; (e) Industrial Hygiene. Conferences of Municipal Representatives, Medical Officers of Health, Engineers and Surveyors to County and Sanitary Authorities, Veterinary Inspectors, and Sanitary Inspectors, have been arranged. In connection with the Congress an exhibition of apparatus and appliances relating to health and domestic use will be held. Tickets, price £1 rs. each (ladies' tickets, 7s. 6d., not including copies of Proceedings) may be obtained from the Guildhall, York, or from the offices of the Institute, of which the address is given above. Mr. E. White Wallis is the secretary. The Institute's policy of holding its meetings and exhibitions in a different part of the kingdom each year cannot be too highly commended.



DESIGN FOR OPERATING THEATRES, NEW ROYAL INFIRMARY, BRADFORD.
EVERARD, SON, AND PICK, ARCHITECTS.

PUBLIC OFFICES (SITES) BILL.

In the House of Commons last week, Mr. W. Benn moved the second reading of this Bill. He said its object was to acquire land for a new building for the Board of Trade and other offices. The site was bounded by the Embankment, the Horse Guards Avenue, Whitehall Gardens, and the grounds of Montagu House. The Board of Trade offices were situated on one part of the site, and the other part would be acquired first.

The new buildings for the Board of Trade would be erected on the portion which was to be acquired first. Those offices were urgently needed, for at present the Board of Trade was housed in 20 different buildings. The Bill also provided for the extension of the Patents Office in Holborn and for the acquisition of land as a safety girdle to protect the Records Office against fire. The cost would be paid in 60 half-yearly instalments.

Mr. W. Rutherford said land could be obtained within the same distance of the Houses of Parliament, but on the other side, at one-fifth of the cost which it was proposed to pay. Every day the representatives of the Treasury declared in answers to questions that they could not afford a few pounds for this or that, and yet when the public departments themselves were concerned they thought nothing of spending some hundreds of thousands in a perfectly unnecessary manner.

Mr. Whitehouse thought that before the second reading of the Bill was taken, hon. members should at least be afforded an opportunity of inspecting the plans. So far as he understood the Bill, the site taken on the Embankment included some garden space. He asked for an assurance that it was not proposed to build on any open space.

Lord A. Thynne said that, while he did not challenge the necessity for further office accommodation for the Board of Trade, he could not help seeing in this proposal another sign of the enormous growth that had taken place in bureaucracy in recent years. It would be perfectly possible to find a far cheaper site, and in his opinion it would be a great advantage to London if some of their great Government buildings could be placed south of the river. He also would like to have an assurance that the garden which was included within the limits of deviation would not be built upon. If it was, the architectural effect of the Embankment would be spoilt. The First Commissioner of Works had suggested that any antiquities found on the site should be handed over to the London Museum. He did not think that this was a satisfactory solution of the question, because the London Museum was partly a private undertaking, though it was accommodated in one of the Royal Palaces. He would prefer to see any archaeological or architectural object found on the site handed over to the London County Council and then lent on loan to the London Museum. Some interesting articles might be found, because the site was one of the principal ferries across the river in ancient Roman times. He asked the Government to give an undertaking that the London County Council and bodies like the City of Westminster would have a right to appear before the Select Committee in order that those who were principally interested in the maintenance of open spaces might have an ample opportunity to be heard.

Captain Murray said he was of opinion that the explanation offered on behalf of the first Commissioner of Works was hardly convincing why the Board of Trade Offices should be placed on the proposed site. The buildings would cover up a valuable open space, and he pressed for an assurance that the open space between the Board of Trade offices and the Embankment would not be covered up by the proposed buildings.

Mr. W. Benn, in reply to the criticisms and suggestions, pointed out that the new buildings were called for by the natural growth of the Administration which went on side by side with the growth of the population and the progress of the country. It was difficult for him to make any promise in respect of the antiquities that might be found and the giving of them to a third party, but the suggestions of the noble lord would be carefully considered in the event of antiquities being found. The First Commissioner of Works had been in consultation with the Clerk of the County Council on this subject. He pointed out also that the question of site had been considered by three committees, and the conclusion had been arrived at that this was the best, though not the cheapest, site for the buildings, taking into consideration the convenience of the public and the question of price. He could not say whether a site on the southern side of the river had been considered, but the whole subject had been carefully gone into. The estimate for the southern portion of the site for the new Whitehall buildings was £250,000, but the exact figure would have to be determined according to the clauses of the Bill. The plans referred to in the Bill had been deposited in the Private Bill Office and were open to the inspection of hon. members. Probably the First Commissioner would offer no objection to their being placed in the Tea Room. As to the gardens included in the site, he said that it was the intention of the First Commissioner, if the Bill passed, to invite the co-operation of a large committee representing all sections of the House to consider the best way of disposing of the site and the best kind of buildings suitable for it. But the fears expressed by the noble lord as to the fringe on the Embankment were not well founded. This, however, was a subject which could be better considered in Committee, and especially after the First Commissioner had heard the views of the persons who were to form the Committee.

Mr. Whitehouse asked whether he was to understand that it was not proposed to extend the building line to any portion of the existing garden.

Mr. W. Benn said that he did not think he ought to give a definite pledge in terms. It was not generally contemplated to utilise the gardens by building. The First Commissioner intended to invite the help of a committee who would decide the matter. The votes for the purpose would have to come before the House.

In reply to Mr. Fell, Mr. W. Benn said that the northern half of the site, which it was not proposed necessarily to take, would probably be worth about £200,000.

The Bill was read a second time.

Mr. Leonard Stokes, president of the Royal Institute of British Architects, has arrived at Winnipeg to examine the competitive plans for the new legislative buildings. The competition having been open to architects in any part of the British Empire, plans have been received from a number of Old Country architects.

URBAN AND RURAL HOUSING.

Mr. Beville Stanier's Rural Cottages Bill, published last week, seeks to set up a Rural Housing Department of the Local Government Board, to consist of three paid Commissioners, for the purpose of providing for the better housing of the working classes in rural areas. The Bill would empower the department to make inquiries into the demand for cottage accommodation and, where desirable, to co-operate with a committee of the County Council concerned in the preparation of a scheme. In the event of a committee failing to prepare or to carry out a scheme when directed to do so the Commissioners have power to do the work themselves.

Lord Strathie (former President of the Board of Agriculture), at last week's meeting of the Somerset County Council, gave a glowing account of the success that has attended the working of the Irish Labourers' Act, and moved that in the opinion of the council it was desirable to extend its provisions to English local authorities. Under the Act 23,000 cottages had been built, the money being advanced by the Government for 68½ years at 3½ per cent. interest. At the end of the 68½ years the houses would become the property of the rural districts, and the rents received would go to the relief of taxation. It was said that as a result of the Act the Irish peasantry were better housed than any other peasantry in Europe. The resolution was carried by 40 votes to 20.

The Local Government Board have withheld their consent to a scheme for the erection of fifty artisans' dwellings at Child's Hill, Hendon, on the ground that the proposals of the District Council are not satisfactory. The plans provided for cottages of five rooms to be let at 8s. 6d. per week. The Board state that in their opinion cottages of a more commodious type could be erected and let from 7s. to 7s. 6d. a week. The council, therefore, have amended the plans, and are about to advertise for new tenders.

The Local Government Board has sanctioned the borrowing by the Swansea Corporation of £6,550 and £10,167 for erection of artisans' dwellings on the Cwm Road and Trewyddia Common sites respectively. The Swansea Housing Committee has decided to acquire a freehold site on Town Hill from the Garden Suburb Freehold Company, Ltd., for £4,000. It is 30½ acres in extent. By this purchase the Corporation will be in possession of the whole of the top of Town Hill for development.

The members of Stafford Town Council, at their meeting last week, discussed at considerable length the recommendation of the Housing of the Working Classes Committee that twenty small dwellings to let at 4s. and 3s. 6d. a week inclusive of all rates should be erected by the Council on land in South Backwalls belonging to the Corporation. It was estimated that the total cost of the houses would be £3,200, and that the total annual charge would be £194. The recommendation was unanimously approved, and it was decided to make application to the Local Government Board for their sanction to the appropriation of the land and for the raising of the loan.

The inquiry as to a scheme for the erection of 267 cottages, at a cost of over £40,000, in the Newtownards Rural

NEWS ITEMS.

Death of Professor Pillet.

The death was announced last week of Professor Jules Pillet. Born in 1842, Jules Pillet entered the Ecole Polytechnique in 1861. He was appointed Professor at the Ecole des Beaux-Arts in 1880, and in 1885 Professor at the Conservatoire des Arts et Métiers. He also held a professorship at the Special School of Architecture and the post of honorary examiner of designs.

New Barracks at Aldershot.

Increased accommodation is to be provided for troops in three districts of the Aldershot command. New barracks are to be built for a company of the Army Service Corps at Bordon Camp; new shoeing forges and stores and new barracks are to be erected at Longmoor Camp, the headquarters of the Mounted Infantry; and additional storeroom accommodation is to be provided for the aircraft factory at Farnborough.

Town Planning Schemes for Sheffield and Newcastle.

It is understood that the Local Government Board have given authority for the preparation of four further town planning schemes under the Housing, Town Planning, etc., Act, 1909. Three schemes are authorised to be prepared by the Corporation of Sheffield, and one by the Corporation of Newcastle-upon-Tyne. In the case of Sheffield, the schemes are to apply to three areas within the city, situate at (1) Greystones and Bannerdale, (2) Sandygate, and (3) Firth Park, Wincobank, and Shire Green, and comprising about 1,100 acres. In the case of Newcastle-upon-Tyne, the scheme is to extend to an area of about fifty-three acres at Craghall Dene.

Canadian Government Offices in London.

It is stated that information is being obtained by representatives of the Canadian Government in London in regard to a number of sites suitable for the proposed new Canadian Government offices in London, but nothing will be done immediately in the matter beyond collating this information and forwarding it to the Government at Ottawa. Next month advantage will probably be taken of the presence of several Canadian Ministers in London to inspect all the available sites and make a final selection. With regard to Westminster Hospital, it is understood that the Governors would be prepared to consider favourably an adequate offer for the land on which it stands in Broad Sanctuary; but if the £200,000 voted by the Dominion Parliament is to cover the cost of both land and buildings for the new offices, the Westminster Hospital site would be too expensive; the Westminster Hospital site being unofficially valued at between £250,000 and £300,000.

Light on Hittite Architecture.

Interesting details of the work done by the German expedition in Central Mesopotamia under Baron Oppenheim have reached Berlin. For some time the expedition has been at work excavating at Tel Halef, the site of the ancient capital of the Hittite Monarchy, and have succeeded in unearthing a series of magnificent works dating back to about the fourteenth century before the Christian Era. The almost entire and gigantic

foundations of a royal palace have been laid bare. Baron Oppenheim has established the fact that this structure rose on an elevated terrace, rectangular in shape. All four walls of the palace contribute a splendid series of stone reliefs, with most remarkable sculptured groups and single figures in an almost perfect state of preservation. Of these "plates" over 170 have been unearthed. Great stress is laid on the discovery of the palace gate. Two colossal basaltic figures of animals have been discovered, which doubtless guarded the approach to the gate, and strongly resemble the similar beasts on Babylonian monuments.

L.C.C. New Schools.

At the last meeting of the London County Council, before the adjournment for the Easter recess, a report was received from the Education Committee stating that work is proceeding in connection with the erection of two new central schools and four new secondary schools, and the enlargement of three elementary schools. The total additional accommodation thus provided will amount to 3,535 places, at an estimated cost of £145,326. Five schools are being structurally improved by the provision of halls, etc., at a cost of £63,100, and one school is being rebuilt at a cost of £18,696. On the opening of the new training college which is in course of erection at Highgate, the whole of the premises at Finlay Street will be used for elementary school purposes, representing an increase of about 700 school places.

Indian Bridge Contract Goes to America.

The India Office has just awarded a contract for the whole of the steelwork required in connection with a new bridge to carry the Oudh and Rohilkund State Railway over the River Jumna at Hamirpur Station, near Allahabad, to the Phoenix Bridge Company, of Phoenixville, U.S.A. This new bridge will have twelve spans, each 250 ft. in length, and of 315 tons weight. It is by far the largest bridge contract for any of the Indian State railways which has been placed in America during the last 25 years, and in response to invitations, tenders for the execution of the work were submitted by a dozen of the leading bridge-building firms in Great Britain and North America. There was a difference of 26½ per cent. in the amount of the Phoenix Bridge Company's tender and the lowest British tender.

Paris and the Housing Problem.

At the moment Paris is taking up the question of workmen's dwellings very seriously, and the Municipal Council is considering the proposal of a loan of eight million pounds for the purpose. The real problem, however, is not the raising of the necessary capital, but the discovery of the appropriate designers. The efficiency of the municipal architects for such strictly utilitarian constructions is being widely questioned in Paris. Even the most strenuous supporter of the new scheme, M. Frédéric Brunet, is very dubious about the advisability of employing the official architects, and advises a system of open competition on the most liberal lines. This consequence of the new housing scheme is illuminating. It shows clearly, an editorial writer in the "Westminster Gazette" assumes, that the elaborate system of municipalisation and nationalisation of the arts and crafts which

PORTINSCALE BRIDGE.

A public inquiry was held at Keswick last week by the Cumberland County Council to hear evidence for and against the proposal of the Council to build a new bridge at Portinscale in place of the ancient one, which has been for some years closed to heavy traffic. There was a large attendance from all parts of Cumberland. Mr. Howard, of Greystoke Castle, Chairman of the County Council, presided.

The case for the supporters of the present bridge was stated by Mr. Frank Marshall and Sir Robert Hunter, Chairman of the National Trust. They contended that the best local feeling was entirely antagonistic to a new bridge.

Canon Rawnsley called attention to the fact that in one week he received 60 letters in answer to a letter in "The Times" from people who knew Portinscale Bridge, all of them condemning the proposed bridge. It was plain that the bridge was one of the attractions of the neighbourhood, and that it was valued by the people of Cumberland was shown in many ways. It was desirable on the ground of economy to spend no more money than was inevitable at Portinscale, as there were much worse places in the district. To place a new bridge 60 yards away and keep the old bridge standing would be an absurdity. The view down the river would be entirely spoiled, and one of the most beautiful reaches would be entirely hidden from the new bridge. The bridge had been thought so interesting that it had been scheduled for preservation under the Ancient Monuments Act.

Mr. William Shires, timber merchant, Braithwaite, contended that the present structure was dangerous, while this characteristic was not relieved by any historic or specially artistic merit.

The Chairman asked Mr. Marshall if all the sentiment would not have disappeared after alterations, seeing that it would be practically a new bridge.

Mr. Marshall said he did not accept that interpretation, except as to the recesses.

The Chairman asked if it was not the site rather than the bridge that they were so keen about.

Mr. Marshall: The making of recesses would not materially change the character of the bridge. You evidently do not object to altering the bridge.—I do not object to altering it in that detail because it is in character.

The Chairman said that reducing the gradients and raising the parapets would alter the characteristics.

Mr. Marshall: If the hump is characteristic, I am quite prepared to give the hump away.

The Chairman said the committee would report to the Council, and it is understood that the subject will be discussed at the May meeting.

has during the last generation been so marked a feature of French administration, has ended in a really sterile academism in the case of architecture at least, which has resulted in a serious waste of public money over the cost of material, and also in the construction of edifices which are from the utilitarian point of view ridiculous failures. Paris, our contemporary concludes, is becoming a little tired of architectural bombast.

London Street Paving.

In 1903 at a conference of representatives of the Metropolitan Borough Councils a committee was appointed to consider the general question of materials and means of paving the streets of London. This committee, of which Mr. A. C. Morton, M.P., is chairman, has now published its ninth annual report. From this it appears that the principal kind of paving laid down last year in the main roads was creosoted soft wood, generally laid close-jointed and "grouted" with pitch. Some boroughs favour a foundation of Portland cement concrete 9 in. thick, while others appear to consider a 6 in. foundation sufficient, even in main thoroughfares. Complaint is made that motor omnibus traffic is detrimental to macadam-paved roads, but, in the absence of any statements to the contrary, it would appear that such traffic is not particularly detrimental to the surface of wood-paved thoroughfares, provided that an extra thickness of concrete foundation is laid. The most striking feature of this year's return is the saving which has taken place owing to the tar-spraying of macadam roads in the cost of scavenging, watering, and maintenance. For instance, in Wandsworth, the expense of these services before tar-spraying four years ago was £96,035 per annum. It has now been reduced to £62,760, whereas the cost of four years' tar-spraying was £6,731.

BREVITIES.

Salford Town Council have decided to erect, in South Backwalls, twenty working-class dwellings, to cost £165 each, and to be let at 3s. 6d. and 4s. a week.

Acton Council has approved of a scheme by the Goldsmiths' Company for the laying out of its estates at East Acton and Acton Vale on town-planning lines.

Halifax Town Council have decided to apply for authority to prepare a town-planning scheme in respect to 880 acres in the Overden district, and 756 acres in the Warley district.

A site for a proposed new temporary school near St. James's Lane, Muswell Hill, is to be purchased for £1,050 by the Hornsey Education Committee.

It is proposed to erect public baths and a public hall on a site fronting Harrow Road, Paddington. The site will cost £18,500.

The Road Board has renewed its offer to contribute, subject to the approval of the Treasury, £875,000 towards the construction of a new western approach to London, of which the cost is estimated at £1,750,000.

In a volume just issued the Associated Newspapers, Ltd., give reproductions of the hundred best designs received in the competition for their £100 prize in connection with the Ideal Home Exhibition now being held at Olympia.

Sheringham Urban Council's new offices, which have just been completed, have been built by Messrs. Blyth and Son, con-

tractors, from designs by Messrs. Stanley, Simons and Co., architects. The contract price was £1,285.

Satisfactory progress with the construction of Liverpool Cathedral was reported at last week's meeting of the Executive Committee. The walls of the choir have now reached a height of 119 ft. 6 in., and those of the chapter-house 49 ft.

London County Council, after an all-night sitting last week, adopted a scheme for the Council to lease cottages to tenants, so that working-men might acquire the leasehold on easy terms. The scheme, which was strongly opposed, will require Parliamentary sanction.

Mr. F. Howorth, architect, has been appointed architect for the building of a new workhouse at Ribchester. The names of two architects were submitted to the vote at a meeting of the Preston Board of Guardians, Mr. Howorth obtaining 26 votes against 23.

An international and universal exhibition is to be held at Ghent from April 25th to October 25th, 1913. It will cover more than 350 acres, and includes twenty-seven buildings, one of which, housing the Ghent Flower Show, will be considerably larger than the Crystal Palace.

A Dutch village, with dwellings, windmills, canals, tulip-fields, and industries, forms a striking feature of the Ideal Home Exhibition which was opened at Olympia on Friday last.

THE STATUTORY REGISTRATION OF ARCHITECTS.

The President of the Society of Architects, Mr. George E. Bond, J.P., has issued an important statement from which we make the following extracts referring to the Society's position with reference to the negotiations with the Royal Institute:—

As a result of negotiations between representatives of the Councils of the Royal Institute and of the Society, extending over fifteen months, certain proposals for the fusion of the Society with the Royal Institute and the promotion of a Registration Bill were agreed to, but on the scheme being submitted to a general meeting of the members of the Royal Institute on January 8th last, the proposals were referred back to the Council of that body for further consideration.

The members of the Society have consequently not yet been called upon to express their opinion on the above proposals by voting, but they have severely and adversely criticised them by correspondence, more particularly with regard to the question and terms of the fusion of the two bodies. The opponents of the scheme on both sides claim that too much was to be conceded for the little to be obtained in return.

The position of the Royal Institute is that it is pledged to registration, and its Council have appointed a committee to consider the matter in view of the situation created by the reference back to them of the proposals above mentioned.

The position of the Society is exactly what it was before, that is to say, it is pledged, as always, to registration, but not to any course of action therein with the Royal Institute, and the Council of the Society will not initiate further steps in regard to the fusion of the Society

with the Royal Institute, though they will be prepared favourably to consider and discuss any reasonable proposition in regard to the subject which may be submitted to them by the Council of the Royal Institute.

In regard to registration, a new situation has arisen. The Society of Architects has been the pioneer in this movement for considerably over a quarter of a century, and when the Council of the Royal Institute adopted a registration policy, this enabled negotiations to be opened with them with a view to the promotion of a joint Bill.

In the early stages of the discussion it became apparent that with regard to one of the main points of the proposed Bill, my colleagues and I, as representing an independent architectural body, could not possibly agree with the view put forward by the representatives of the Royal Institute, and as they were equally determined not to accept ours, the question of amalgamation was suggested to us as a way out of the difficulty: for both parties recognised, as all thoughtful persons must, that in the present congested state of public business in Parliament a contentious Bill would not have the least chance of reaching a second reading; and that neither party could hope, under these conditions, to pass a Bill through Parliament unless there was unity of action.

As, however, the Council of the Society of Architects have laid down, in the proposals for the fusion of the two bodies, the minimum which they can recommend their members to accept, and as these proposals have been severely criticised by the members concerned, it would seem unlikely that further progress can be made in this direction, but there remains the alternative of continuing the negotiations with regard to a joint Registration Bill; and we are prepared and indeed desirous of continuing them, hoping thereby to establish that unity of action which is essential in that case to success.

The opinion has been very freely expressed by many influential members of both bodies that in order to secure the passage of a Bill which will protect the interests of all practising members of the profession, and not merely those belonging to one institution, it is an essential condition that the Society of Architects shall continue its existence as a powerful independent body.

I may here state, that at the time the negotiations with the Royal Institute were first opened, the Council of the Society had formulated a certain course of action in regard to the introduction of the Society's Registration Bill into Parliament, and the machinery which then existed is still available, and should it eventually be found impossible to make progress in any other way, that machinery will be set in motion. In other words, we are prepared, if necessary, to resume at any moment that active independent propaganda hitherto so successfully pursued, but which we temporarily suspended in order to consider another means of attaining the same end.

Having made clear the present position as between the two bodies, and the policy of the Council of the Society in regard to the registration question, I would now call attention to the fact that the work and activities of the Society in other directions are being carried on exactly as before, without reference to any matters pending between the Councils of the Society and of the Royal Institute.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY
APRIL 24th, 1912.

Volume XXXV.

No. 901.



UNTER DEN LINDEN, BERLIN.

This famous thoroughfare is 60 metres wide. The view above shows the monument to Frederick the Great, in the centre.



MEMORIAL TO QUEEN VICTORIA AT NICE.

Photo: "News Illustrations"

This memorial was unveiled on April 12th by M. Poincaré, the French Premier.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 24th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 901.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The London Society and London Improvement.



HAT has become of "the London Society?" We chronicled its opening meeting some months ago, when its formation was resolved upon amidst a good deal of enthusiasm; but we hear nothing more of it since, and we observe that the question has been raised in the general Press, in one quarter at all

events, as to what this society is going to do, and how far its membership has progressed and prospered. One would certainly like to hear some further sign of life from it. For a society of that kind to produce a definite effect either upon opinion or upon action in regard to London improvements, it is essential that it should be a numerous body. People in London are in general so slow to take up any new ideas about public improvements, so difficult to arouse to any enterprise or enthusiasm in regard to such subjects, that it becomes of consequence to draw as many of them as possible into the net of a society pledged to improvements. It was, we suppose, with that idea that the subscription was fixed at what was considered the low figure of one guinea. But there were criticisms heard in the room, at the time of the meeting, that this was too high, as a matter of policy, for the best purposes of such a society. Would not a half-guinea subscription have been a wiser enactment? As it is very well pointed out in the "Graphic," if one person in every thousand of the London population joined the society, it would be the largest society in London. We doubt if one person in a thousand can be got to pay a guinea subscription, but it might be possible to get that number, or even a larger contingent, with a half-guinea subscription. There must surely be one in a thousand people in London who care about its improvement; let the society announce a half-guinea subscription and invite them to come in; so that every one who is interested in the subject may realise that there is a machinery provided, or in course of provision, to initiate and assist schemes of improvement.

After that move for popularising the society and enlarging its borders has been carried through, we should like to hear something as to what is to be done; what schemes the society proposes to promote. We may name here some which might and ought to be considered.

The first thing to be done in London is to obtain a general official and public recognition of the principle that the erection of any important new building is not merely a question of architectural design, but of architectural placing. That is the point in which, in London, we are so much behind the two most important capitals on the Continent. Over and over again we have lost or spoiled an opportunity by erecting a building in the wrong place and laying out a street on the wrong lines, or with no sense of lines at all. We want to see established something like a popular opinion on that subject, a general recognition of its importance; and that is one reason for desiring the most extended membership of The London Society. With the general support of one in a thousand (or more) of the population, the society would form in itself a nucleus of enlightened

public opinion, sufficiently numerous to exercise a real influence on the still wider public opinion outside of its ranks. If such a society, in such numbers, had been in active existence two or three years ago, it may be questioned whether the unsatisfactory proposals for St. Paul's Bridge would ever have been put forward at all; it would have been known that there would be a considerable body of Londoners who would not have been satisfied with them, and who would have been too numerous and influential to be overlooked. If the society, in such large numerical force as we suggest, was in active existence now, it was probable that we should not have had the new demonstration just made against the completion of Regent's Quadrant on the new design, or the almost scandalous suggestion that (to please the shopkeepers) it should be pulled down again.

Perhaps one of the first things that we ought to look to in the way of London improvements is the condition of the south bank of the Thames, between Westminster and Blackfriars Bridges. More than half a century ago we made the great improvement which changed the north bank from a muddy shore, with a heterogeneous collection of buildings on it, into a grand roadway and a masonry river-wall. The building of the London County Hall has rendered essential the formation of a similar roadway and quay in front of it. Is it to stop there? Surely not. The commencement of a Thames embankment there should be continued at least as far as Blackfriars Bridge, where the northern embankment now ends. That would be one of the greatest London improvements waiting to be accomplished; as a duplicate of the northern embankment it would give a splendid unity to the scheme.

Another work which needs to be taken in hand is the proper architectural treatment and laying out of the open space at Hyde Park Corner. When the arch was moved from the position parallel with Apsley House, which it formerly occupied (a fact which is almost forgotten now), it made no doubt an axial termination to Constitution Hill, but in every other respect the scheme was carried out without any architectural sense whatever. The open space is cut up into shapeless triangles of land, and the arch on its western face fronts nothing, and is axial with nothing. It would be quite possible, even now, to lay out the space in an architectural manner. The Wellington monument would have to be shifted to do this; it would have to be manipulated so as to come into an axial scheme; but there would be no impossibility in this. The monument itself, it must be admitted, is a very poor thing, not artistically valuable either in an architectural or a sculptural sense, and as far as art is concerned it might be thought that it were better obliterated altogether; but that would hardly, in other senses, be right. A monument to a great man, once put up, is a thing to be treated with respect, apart from any question of its artistic value.

The next thing we would suggest is that a new façade ought to be erected to Buckingham Palace. We have always thought, and one of the competitors thought also, that a new façade to the Palace ought to have been an integral part of the Queen Victoria Memorial scheme. As it stands, the Palace façade, poor and commonplace as it is, is an anti-climax to the great road leading up to it, and the

large and rather pretentious memorial standing in front of it. As things are, of course, the new façade could no longer be thought of as coming into the provision of funds (already we suppose exhausted) for the Queen Victoria Memorial scheme. It would have to be regarded as a separate outlay. And surely it would be worth while, as a matter of national dignity, to spend public money in giving an adequate façade to the principal royal palace in the capital, the shortcoming of which has become all the more evident since the carrying out of the Memorial Road. And there is a further suggestion to be made in connection with this idea. Our official architectural establishment has made such a sad muddle with the surroundings of the Marble Arch that the unfortunate erection looks ridiculous in its present position. The Marble Arch was originally erected in front of old Buckingham House, on the site of which Buckingham Palace was subsequently built; it formed the state entrance to the forecourt there, axial with the Mall. Well, then, pull down the Marble Arch once again, and transport it to its old position, as the state entrance to the forecourt of the present palace. It is not a very remarkable architectural monument; but it has a history; it would be a pity to destroy it; it has no purpose or fitness where it is, but as a gateway to the palace forecourt it would be in a position in which it would have some meaning, besides which there would be a certain historical fitness in restoring it to its original purpose on nearly its original site.

Another important subject is the improvement of Piccadilly Circus (which has practically ceased to be a circus) into what would become in that case Piccadilly Place. Mr. Norman Shaw made some years ago a fine plan for this which would involve extending the open space for a considerable distance eastwards; rebuilding the block which is now Swan and Edgar's premises in a style to harmonise with the new buildings in the Quadrant, and making an effective east elevation towards the new Place; and removing the commonplace architecture of the London Pavilion to make way for something more worthy of the site. This plan was published some time ago, and excited a good deal of enthusiasm among those who saw it; but the project seems to have gone to sleep ever since, and nothing more has been heard of it. It is surely time that the possibility of carrying it out were taken into serious consideration. And in connection with this comes the necessity of securing the eventual completion of both sides of the Quadrant in accordance with the monumental design of the part now erected. That is a thing that must inevitably be done, in despite of the outcry of the shopkeepers, unless one of our most remarkable schemes for the architectural improvement of London is to look ridiculous. It is unfortunate that the new buildings are higher than the old ones, for the latter were just the right proportionate height for the width of the street, and with the new buildings it will look too narrow; but that was not the fault of the architect of the new portion; he did all he could to keep the buildings down. It is this modern desire to get still more and more rental out of every square yard of ground which is leading everywhere to the erection of buildings too high for the width of the streets, which was calculated for buildings of less height. If this goes on, it will end in transforming our best streets into gigantic alleys, narrow passages between lofty buildings; and nothing spoils the look of a city more. The fact is, that where a demand is conceded for greatly increased height in the building line, in new premises, it ought to be accompanied by a condition that the building should be set proportionately back from the original street line. If this were done in every case, if the height were increased all along the street we should eventually have a wider street, suitable to the increased height of the buildings. It is a point which the London County Council ought seriously to consider, for it not only concerns architectural appearance, but health. To go on building higher and higher on the same area of ground means eventually a complete overcrowding of the city with buildings which have not sufficient open space around them.

Then there is the proposal, which has been much discussed, of taking Charing Cross Station to the other side of

the river, and replacing the railway viaduct by a new and wide bridge for general traffic. This would be an immense public improvement, both in regard to convenience and appearance; the railway viaduct is a very ugly structure in itself, and the stoppage of all cross-river road traffic at this important point, and sending it round by two long detours over Waterloo or Westminster Bridge, is an absurdity; one wonders that there has not been a public outcry in regard to it long ago. But in London, we are far too much accustomed to act on the maxim that "whatever is, is right."

This reminds one of the importance of the whole subject of bridges over the Thames, over which those who care about the architectural improvement of London are kept in a state of continual anxiety every time a new bridge is talked about. Bridges are supposed to be a class of structure with which engineers only are concerned; and as engineers for the most part care nothing about the appearance of a bridge, but only about structure and gradients, the first thing we generally hear about a new bridge is that "the engineer has prepared a design which is quite satisfactory to the committee," and so on. Then comes the difficulty of ousting the engineer from the sole charge of the erection, and of persuading the official bodies and the public that in erecting so important a structure as a new bridge in a great city there is something else to be thought of besides gradients, headway, and span. All this ought to be stopped once for all, and the settled view accepted that a city bridge is of architectural as well as of practical importance, and ought to be advised upon and designed accordingly.

These are a few among the great London improvements which a body like the London Society, if it carries out the programme sketched for it at the opening meeting, ought to be able to do much to assist and promote; and so we ask again—what has become of the London Society, started at an enthusiastic meeting, and when are we going to hear more of its constitution and its undertakings?

The Society of Painters in Water Colours.

THE present is hardly one of the best of the Society's exhibitions, but there is this special interest about it, that some of the most gifted members of the Society have started on rather new lines of style, or of subject. Miss Fortescue-Brickdale is one of these. Instead of subjects with figures on a large scale, she shows us this year a terrace in some ideal garden, backed by rich masses of foliage, with little highly finished figures engaged in or looking on at a game of archery in which the shooter for the moment is directed by a winged figure of Cupid. It is a small work in a grand style, looking like a large picture seen through a diminishing glass, and in its peculiar way is one of the best things the artist has done. Mr. Crockett, whom we have known mainly as a painter of pretty village maidens in breezy landscapes, has served the visitors with a conundrum in the shape of a large allegorical drawing entitled "Transition," a very clever composition to the meaning of which no clue is given, and one is certainly needed. One of his pretty rustic figures, with her usual charm, is seen in the scene called "A Windy Corner." Mr. Walter West, besides sending one of his usual highly finished interiors with figures, appears also as the painter of a fine and effective landscape, "Moonrise in Italy." It is always gratifying to find artists of exceptional talent trying a new class of subject, and declining to move in one accepted groove.

Mr. Hughes, who seldom repeats himself, has two remarkable works; "Blondel's Quest," the troubadour singing under a castle wall the song which was to unearth Richard Cœur de Lion—a work with a very original colour scheme; and "Night with her Train of Stars," a heavily robed, crowned figure floating through the night, followed by her train of stars, infant figures each with a star on its forehead; one of the most elaborate and successful works of this class which he has produced. Among other figure

subjects of importance is Mr. Anning Bell's procession of the women bearing spices to the tomb of Christ, which only just misses of being solemn and pathetic from the faces looking rather too much like portraits of individual personages; as Burne-Jones said, it is better to be a little more abstract in portraying ideal scenes. Mrs. Laura Knight is at her best in "The Flight," where two girls in a bright landscape watch a flight of birds. There are too few of such purely artistic conceptions in the exhibition; too many of such pictures as "The Short Cut Down the Cliff," and "Congratulations," and so on; commonplace incidents of life cleverly painted in a commonplace spirit. We see pictures of this class every year, and wonder why they are painted and who is supposed to care for them; but we presume they hit what is called "popular taste."

Among the landscapes Mr. Philip is as grand as usual with his "Storm" in the Isle of Skye, and Mr. Paterson also makes a grand effect in "The Castle: Morning Mist," in which a mediæval castle rises out of a belt of fog; it looks rather like a "made" effect; still, this is the poetry of landscape, unlike the mere prose of Mr. Gregory's carefully elaborated scenes. Mr. Eyre Walker seems to be experimenting in a new method of treating the colour of landscape, and the results are less fascinating than usual in his work, but perhaps something will come of it. Mr. North gives us one of his best visions of a landscape steeped in a "light that never was on sea or land"; beautiful, but hardly nature; while Mr. Robert Little treats nature so as to extract an artistic meaning out of natural effect; "Pittenweem Harbour, Evening" is, in a quiet way, one of the best things he has done. Among other noteworthy landscapes are Mr. Albert Goodwin's "In the South Seas," with its remarkable study of tropical vegetation in the foreground, and Mr. Allan's perfect bit of open-air effect in a picture of "Summer Morning at Brora"; and Mr. Dollman, whom one generally regards as a figure painter, has achieved in his "Sussex," one of the most perfect small landscapes in the room—the very spirit of Sussex scenery.

Architectural subjects are numerous and mostly good; Mr. Reginald Barratt is, as usual, admirable in his combination of architectural truth of detail with pictorial effect; we know of no other artist of the day who can draw and paint architecture with such force and realism and yet never give us the impression that this is merely "an architectural drawing": differing in this respect from Mr. Rooke, whose architectural drawings are most careful and conscientious, but are not in the true sense pictures. Mr. Paterson, on the other hand, hardly emphasises the texture and details of buildings sufficiently, when he takes them as subjects, but he has made an effective picture out of a mediæval castle, "En Touraine," with its perspective of round towers and their conical roofs. Among drawings which come under none of the above-mentioned categories we must not omit a word for Miss Macallan Swan's still-life study of "Wall-flowers" in a jar; a splendid piece of colour.

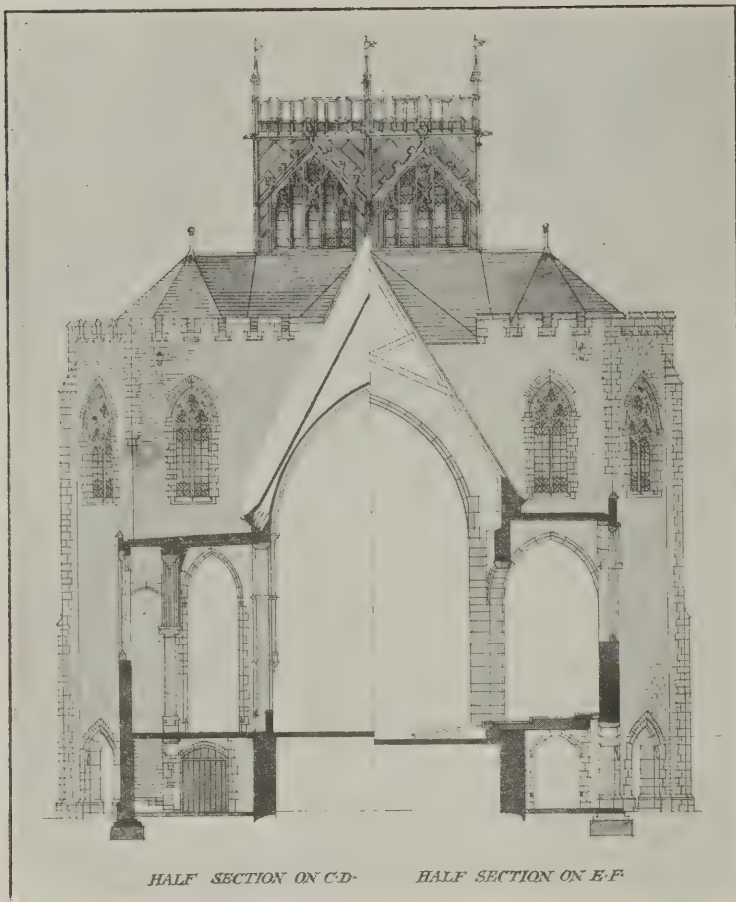
The Housing Problem in London.

MR. RAYMOND UNWIN writes to congratulate the "Times" on the insight shown in a recent article on this subject, in perceiving that the real escape from the difficulty of providing houses for the working classes lies in the adoption of the principle of providing for all classes of houses on one area or in one district, instead of keeping upper, middle, and lower-class dwellings as separate speculations. This is, of course, the principle on which the Hampstead Garden Suburb was planned, with which Mr. Unwin was a good deal concerned. It is argued that the middle-class house is the most profitable as a building speculation, and will therefore always be preferred by the speculating builder to an outlay on working-class dwellings; therefore let us encourage the laying out of building estates for the joint production of both classes of dwellings. We fear that both the "Times" and Mr. Unwin are consciously or unconsciously shutting their eyes to facts. Whatever may be thought as to the principle, the fact remains that

people who live in houses of a certain class and standard do not want to have their dwellings contiguous to or mingled with others of a lower class and standard; and the immediate result of making the attempt would almost certainly be to lower the rental value of the better class of houses; so that the scheme would, financially speaking, cut its own throat. It is all very well to say that it is so much more beautiful for rich and poor to live together in the same or in contiguous streets or squares, and not to shun each other; it may be so in theory, but in practice it will be found that neither class desires the amalgamation, and it is no use legislating for it. You may do this: you may, in the case of a very large new building estate, sell or finance it on condition that a certain proportion of the land is to be utilised for working-class dwellings, where there is room to divide up the estate for different classes of property; but it is no use endeavouring to mingle them; neither class likes it—the poor, we believe, even less than the rich. But there is one good suggestion made by Mr. Unwin, that the limitation of the number of houses to an acre should be modified with reference to the size and cost of the houses. Otherwise the probability is that each plot will be made of sufficient size to accommodate a fairly large house, which house, in the case of the working class, will come to be occupied by two families. Logically, no doubt, the limitation as to the number of houses per acre should bear a relation to the obligation as to the size and rental of the houses. So far, building legislation may be framed so as to encourage the building of working-class dwellings; but to propose to mingle them with higher class dwellings is only attempting to ignore human nature and the habits and traditions of modern life.

The Question of Employment Cards.

IT appears, from a report of a recent meeting of the London Society of Master Decorators, that a proposal to issue employment cards, which the workmen could carry about with them, and on which would be entered the particulars of their employment, rates of wages, date of discharge, etc., is under consideration. The advantage to the employer is obvious. It would enable him to form some opinion of the qualifications of men applying for work. It seems to be thought that the men would raise no objection to this system, since it would give preference to competent workmen; and it has been resolved to ask the unions "whether they were willing to co-operate," and if so, whether they would agree to pay for the cards. We have, of course, no desire to interfere with the domestic economy of the Society; but since the proposal has been made public, and is therefore a fair subject for comment, we should like to do them the service of saving them, if possible, from any further trouble in the matter. In the report of their proceedings there is no evidence that they are aware of the extreme bitterness of the opposition with which similar proposals have been met. It may therefore be useful to recall that years ago the bricklayers repudiated the practice in a veritable passion of protestation; and in certain callings outside the building industry the abuse known as "chair-marking," to which a similar system was found to lend itself, led to violent turmoil and to considerable litigation. Unscrupulous employers devised means of indicating on the tickets—by initialling them in a peculiar way, or by placing dates or other marks in an agreed position—their distrust or adverse opinion of the holders, who, on becoming aware of the trick, naturally refused to bear about with them when seeking for work the tacit condemnation of their own characters, and so the system speedily drove them into open rebellion. Possibly we are living in more ingenuous and more tractable times, in which all employers are beyond suspicion, and all workmen are trustful and docile. We are quite sure that the proposition has been put forward in entire good faith and with the best possible intentions; but we greatly doubt the wisdom of persevering with it, and tender this advice in all friendliness, in the sincere hope that it may prevent possible friction with the unions.



CLIFTON COLLEGE CHAPEL: ALTERATIONS AND ADDITIONS.
NICHOLSON AND CORLETTE, F.F.R.I.B.A., ARCHITECTS.

Wren's Use of Portland Stone.

A WRITER in the "Pall Mall Gazette," Mr. W. Johnson, F.G.S., makes some remarks on Wren's use of Portland stone which are worth repeating.

It is safe to assert, he says, that of all limestones which have been employed in our great public buildings, Portland stone meets the eye most frequently. It was made popular by Inigo Jones and Sir Christopher Wren, though its occasional use can be traced back as far as 1623. Jones had actually restored a portion of old St. Paul's with Portland stone, and when Wren, after the fire, commenced the new cathedral, he cast around for a suitable building stone. "All the most eminent masons of England," he says, "were of opinion that stone of the largest scantlings was to be obtained there [at Portland] or nowhere." So to Portland Wren travelled. His inspection pleased him, and the Grove Quarry, situated near the East Cliff, was opened. This particular quarry has now long been abandoned, because the stone, being of a somewhat harder nature than usual, was a little more expensive to work.

Portland limestone, to give it the more explicit name, though typically developed in the peninsula, is also obtained elsewhere, as in the Isle of Purbeck and the Vale of Wardour. The rock occurs in a series of beds belonging to what geologists call the Jurassic period; that is, to an era far anterior to the deposition of the chalk downs of the Home Counties. A close examination of an average specimen of Portland stone will show that the rock is oolitic—that is, it possesses an oviform structure resembling a little the roe of a fish in appearance. Generally, the constituent particles are so fine that their rounded shape might be overlooked, and though the spherules are of larger size in certain strata, rarely do

they approach the coarse-grained but softer oolites of Bath and the Cotswolds, or the freestones of Northampton and Lincoln. In those coming from a group of strata, and not from a single layer, one would naturally expect considerable differences in the quality and texture of the material. And this Wren discovered to be the case.

Among the buildings in which Portland stone has been used are Somerset House and the British Museum. One particular quarry supplied the material for these, while from another was obtained the stone for the walls of the Goldsmiths' Hall and the Reform Club. Still another quarry was utilised for the Foreign Office and the Horse Guards.

The important question is: How far is Portland stone affected by the smoke-laden atmosphere of London, with its comparatively large percentage of acid constituents? The answer, in brief, depends upon the quality of the stone selected. Samples in which the tiny egg-shaped granules are bound together by a partially crystalline carbonate of lime stand the wear and tear well, but where the cementing matter is impure and more friable the mass tends to crumble away.

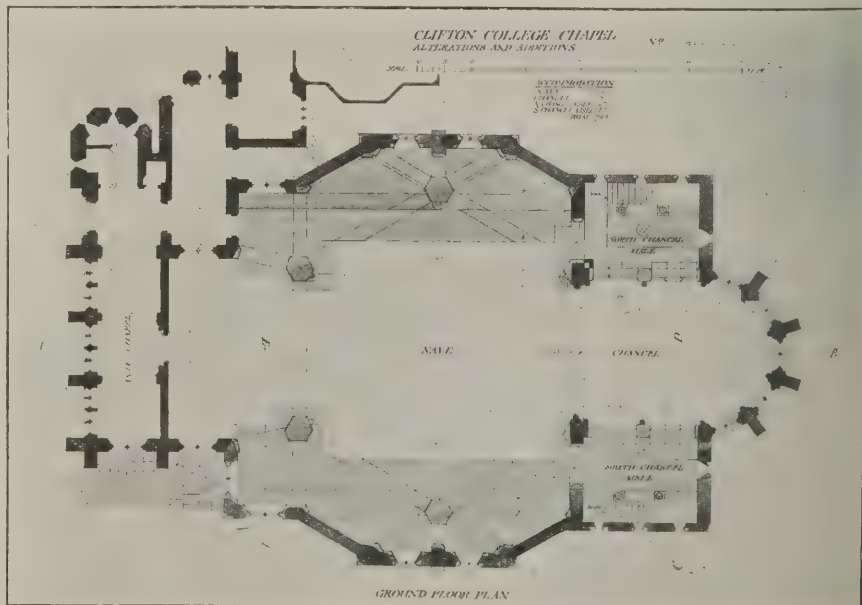
Additions to Clifton College Chapel.

THE chapel at Clifton College, Bristol, is a comparatively old building, having been begun in the 'sixties and enlarged subsequently by the addition of a north aisle. At the recent enlargement the east and west ends of the old chapel were retained, and a new hexagonal lantern with transepts was constructed in the centre, from designs by Messrs. Nicholson and Corlette, F.F.R.I.B.A. There is a crypt below the chapel, the extensions to which are vaulted in concrete.

The new walls are rubble built, with brick bond courses and internal quoins. The piers, arches, and ribs are ashlar work, and the vault cells are of concrete slightly reinforced. A large central area is thus obtained without piers or obstructions of any kind.

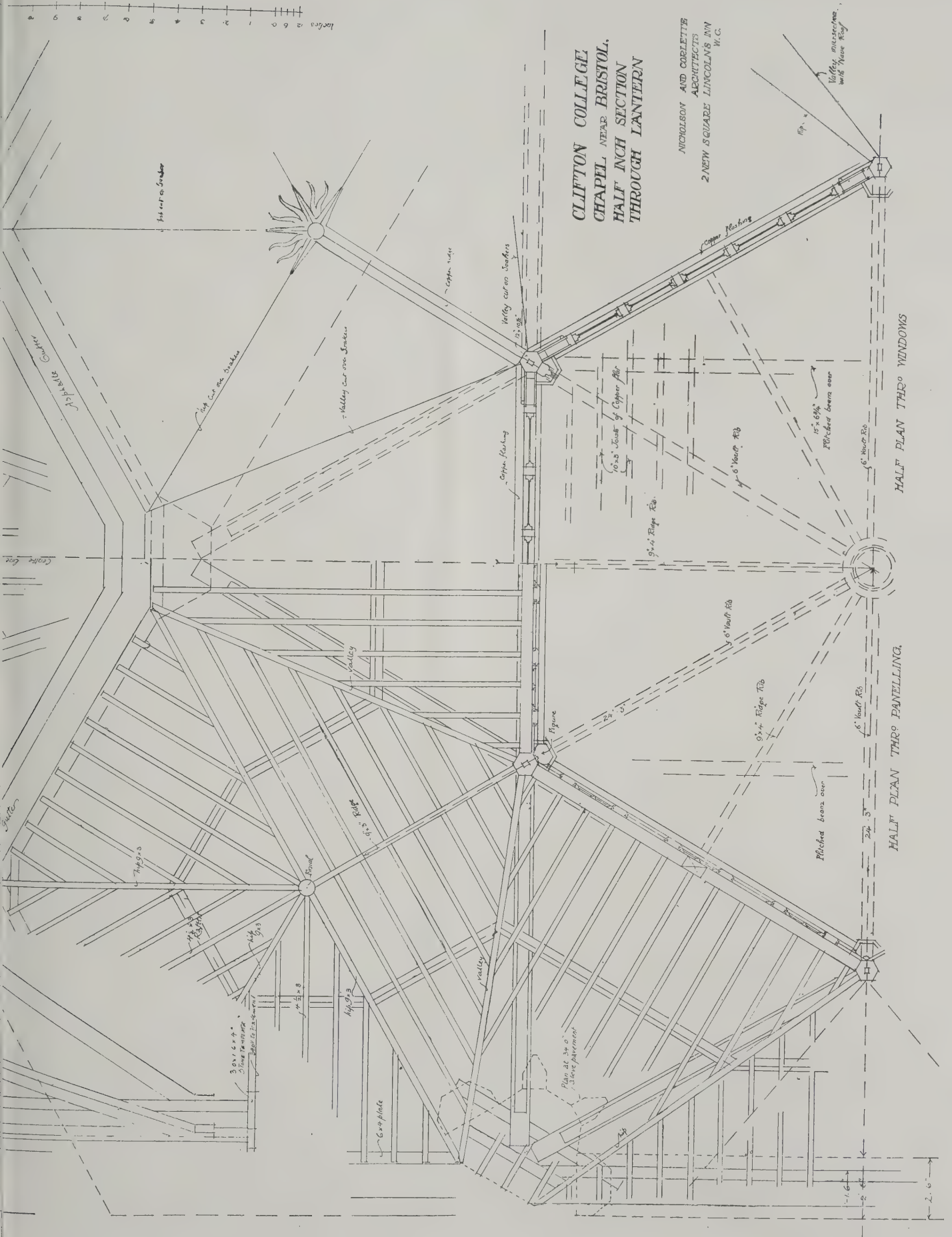
Above the vaulting is a timber lantern carried on six intersecting queen-post trusses, the queen-posts forming the angles of the lantern, which is placed eccentrically with regard to the lower hexagonal space. This lantern is of course self-supporting, and does not ride on the stone vaulting. The detail construction is shown on the drawing reproduced as Centre Plate in this issue. The windows are of teak, and the exterior is covered with copper.

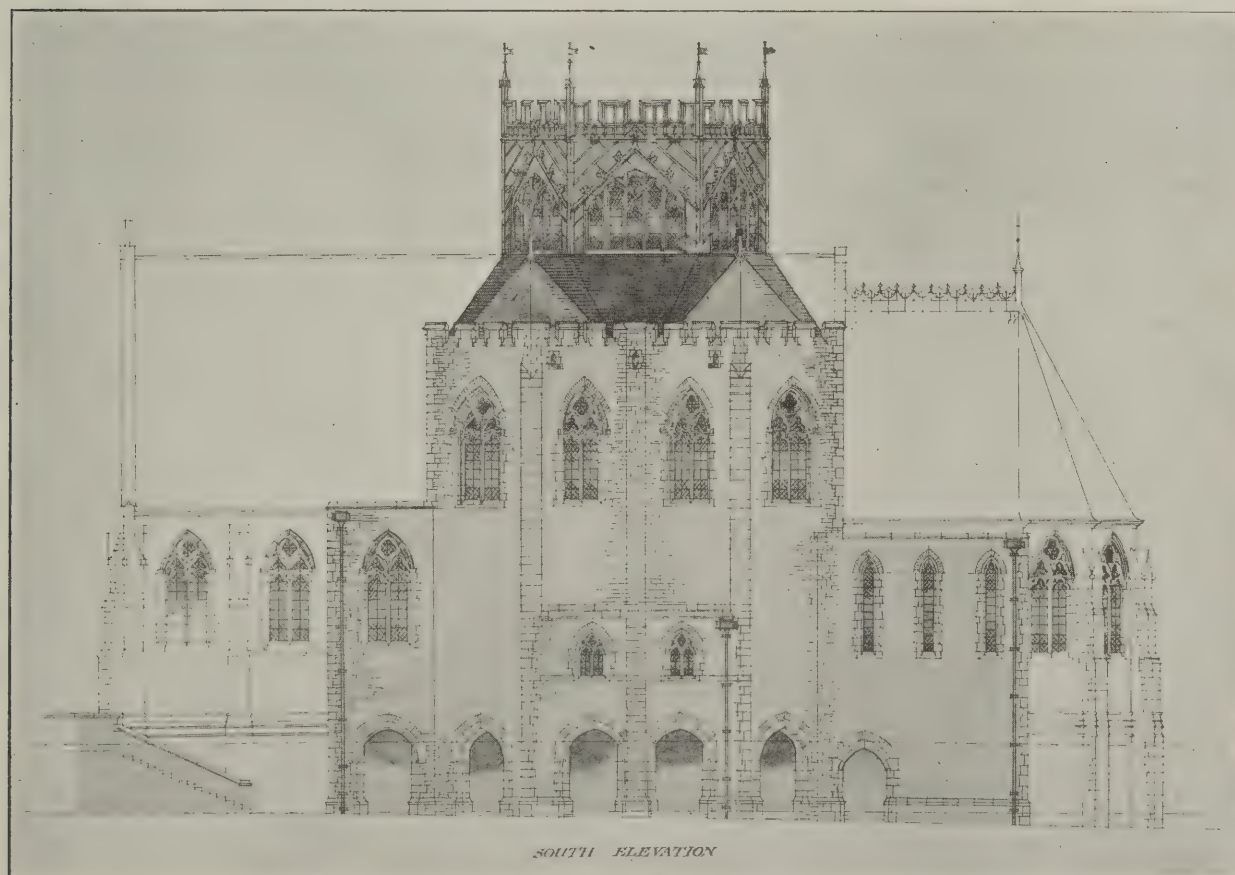
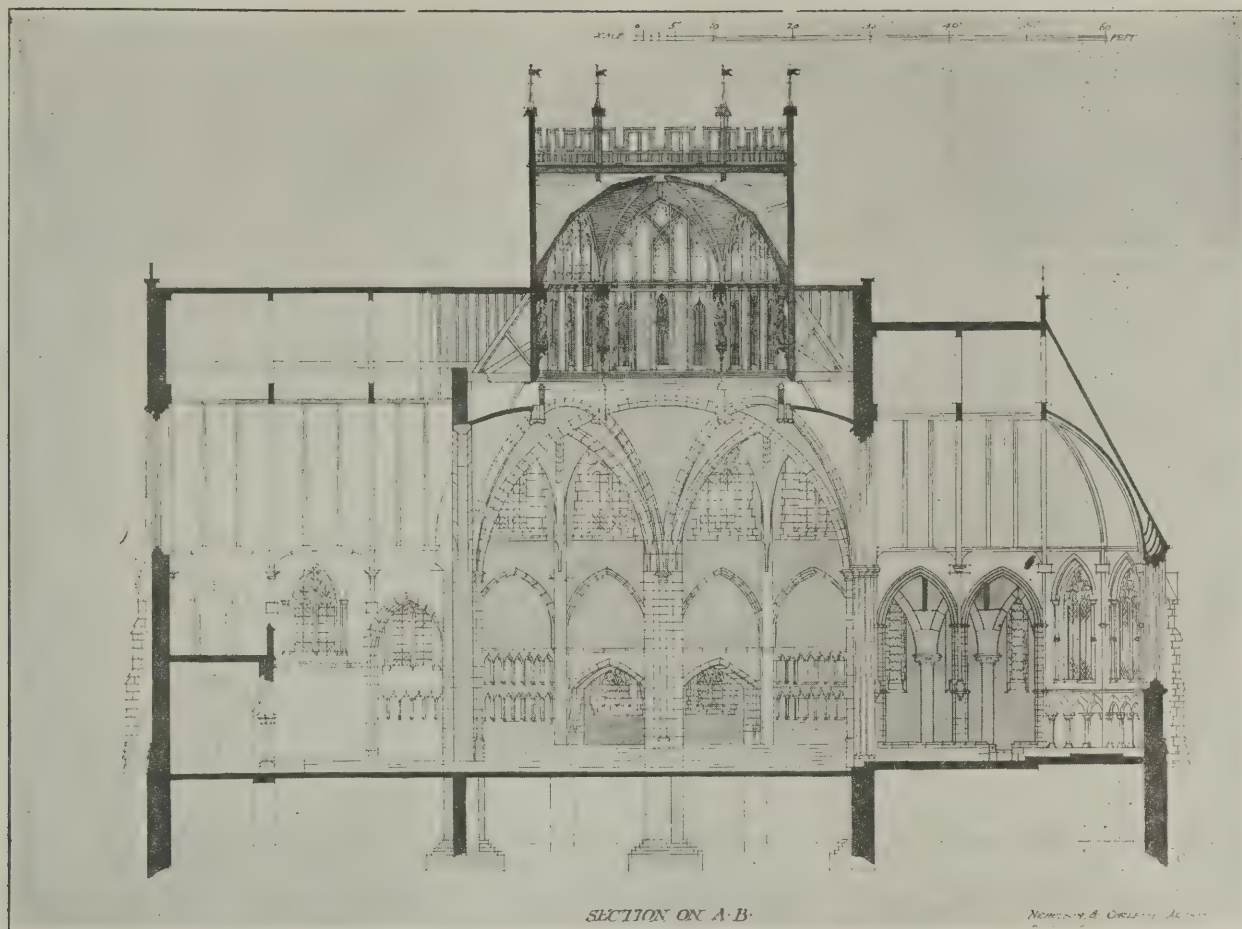
The window dressings and other wrought stonework of the old chapel have been reused in the new work, so that very little new masonry was required except for the piers and vault ribs. The builders were Messrs. Cowlin and Son, of Bristol.



NICHOLSON AND CORLETTE
ARCHITECTS
2 NEW SQUARE LINCOLNS INN
W. C.

HALF PLAN THRO' PANELLING.





ALTERATIONS AND ADDITIONS TO CLIFTON COLLEGE CHAPEL.
NICHOLSON AND CORLETTE, F.F.R.I.B.A., ARCHITECTS.

COMPETITIONS.

Scottish National Memorial to King Edward VII.

The designs for the Scottish National Memorial to King Edward VII., which is to take the form of an entrance to Holyrood Palace, have now been received by Sir Thomas Hunter, the Town Clerk of Edinburgh. The architects invited to compete were:—Sir Robert Lorimer, R.S.A.; Mr. G. Washington Browne, R.S.A.; and Mr. Hippolyte J. Blanc, R.S.A., all of Edinburgh; Mr. John J. Burnet, F.R.I.B.A., Mr. J. Miller, A.R.S.A. and Mr. H. E. Clifford, F.R.I.B.A., of Glasgow; and Mr. R. J. Macbeth, architect, Inverness. Mr. Macbeth died the other day, but judging from the fact that there are seven sets of designs (one of the competitors has sent an alternative design) it would appear that Mr. Macbeth's scheme had been completed before his death. The Executive Committee, who will adjudicate, are to be convened at an early date. After being examined by them, the designs will be sent to London for inspection by His Majesty the King, with whom the final selection will probably remain. A provisional estimate placed the cost of the memorial at £14,000 or £15,000.

Miners' Federation Hall and Offices, Bolton.

The award in this competition is as follows: 1, Messrs. Bradshaw, Gass, and Hope, 19, Silverwell Street, Bolton; 2, Messrs. Sykes and Evans, Salisbury Chambers, 7, Chapel Walks, Manchester; 3, Messrs. Thos. E. Smith and Son, Central Chambers, Fold Street, Bolton. The premiums offered were £50 and £25 for the two best designs. Mr. Jonathan Simpson, F.R.I.B.A., was appointed assessor. The designs are not to be exhibited.

Designs for Mural Paintings.

The Committee of the forthcoming Exhibition of Designs for Mural Paintings and for the Decoration of Schools, etc., announce a competition for the decoration of the vestibule of the Middlesex Hospital. Mr. Edmund Davis, a governor of the hospital, has generously arranged for the rebuilding of the entrance, with a view to mural decoration. The circular giving particulars may be obtained of the Hon. Secretaries, Mural Decoration Committee, Crosby Hall, S.W. From this circular the following particulars are extracted:—"Vestibule of the Middlesex Hospital, Berners Street, W.C.—Architect, Mr. Keith D. Young, F.R.I.B.A. The plans will provide for four wall-spaces, lit from the roof, each measuring 5 ft. 8 in. high by 10 ft. 11 in. broad. The architect proposes a dark wooden dado, preferably of teak, and a moulding for the paintings either of the same material, or of some other, at the discretion of the painters, and that outside the moulding should be a plain surface of white or light-coloured plaster. Plans

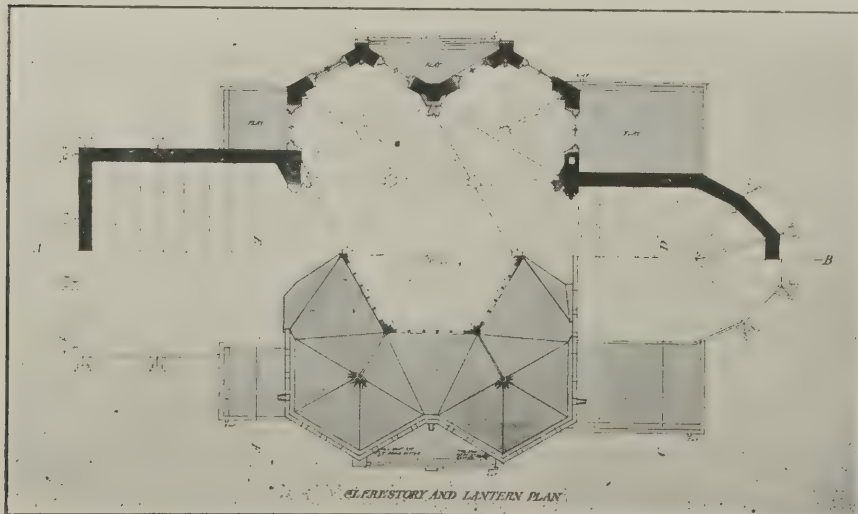
are on view at Crosby Hall, showing the arrangement and lighting. The subjects, it is suggested, should be symbolical such as "The Good Samaritan," or might be cheerful scenes of convalescence in the country or by the sea, or scenes of ordinary life at different times of the year. Each competitor is limited to one design, but the occasion is a good one for co-operation between several designers. Mr. Davis offers £100 for the execution of each painting from a design approved by him. In the event of a design being accepted and not approved by the Middlesex Hospital, the sum of £50 will be given in lieu of the execution of the work.

Bristol Society of Architects.

The annual general meeting of the above society was held on April 15th, when the Council and officers for the session 1912-1913 were elected as follows:—President, Mr. G. H. Oatley, F.R.I.B.A.; vice-presidents, Mr. J. Foster Wood, F.R.I.B.A., and Mr. Mowbray A. Green, F.R.I.B.A.; members of Council, Messrs G. C. Awdry, F.R.I.B.A., T. H. Weston, F.R.I.B.A., G. C. Lawrence, A.R.I.B.A., F. W. Wills, F.R.I.B.A., R. C. James, F.R.I.B.A., W. L. Bernard, F.R.I.B.A.; honorary secretary, Mr. C. F. W. Denning, Lic.R.I.B.A.; associate members of Council, Messrs. B. Wakefield, Lic.R.I.B.A., and A. B. Botterill, A.R.I.B.A. (honorary treasurer).



ALTERATIONS TO CLIFTON COLLEGE CHAPEL: VIEW FROM CHANCEL
NICHOLSON AND CORLETTE, F.R.I.B.A., ARCHITECTS



THE R.I.B.A. CONDITIONS OF CONTRACT: SOME POINTS FOR REVISION.

BY A. SAXON SNELL, F.R.I.B.A.

The author, while suggesting that upon several grounds the R.I.B.A. Form of Contract is in need of drastic revision, and, in particular, that it should, if possible, be made much shorter, confined himself mainly to two points—the employment of sub-contractors, and the effect of the arbitration clause.

MR. SNELL thought it due to the Practice Committee to explain that what he had to say did not necessarily represent the Committee's present views. He was no longer a member of the Committee, and had not been in touch with its work for nearly two years. It must, therefore, be understood that he was writing as a "free lance."

The author opened his subject by quoting the preamble of a Memorandum drawn up by the Practice Committee and submitted to the Council in 1907, in which it was recorded that questions had arisen as to the effect of a building contract under the form of contract and conditions recommended for use by the R.I.B.A. These documents were settled in their present form in 1903 in conjunction with the Institute of Builders and the National Federation of Building Trade Employers of Great Britain and Ireland. The forms previously in use were settled in 1879, and gave considerable power to the architect. On the settlement in 1903 this was altered at the instance of the Institute of Builders. Certain matters dealt with by Clauses 4, 9, 16, 19, and part of 18, were reserved to the architect, but new words were introduced into Clause 30, which have been held to destroy the effect of a certificate given by the architect, and the arbitration clause was also widened so as to lay open to review every certificate whether interim or final, and (subject to certain reservations) every opinion and decision of the architect. From subsequent judicial decisions it appeared that the effect of these alterations is not only to deprive the architect's certificate of all finality as between the building owner and the contractor, but that an architect who has given a certificate which is successfully challenged by a building owner in an action brought by the builder to recover the amount so certified to be due to him, is liable to repay to his client the building owner the costs incurred in resisting the builder's claim. The decision in *Goddard v. Ferguson* appears to carry with it the conclusion that the architect acting under the present authorised form of contract is no longer in the position and clothed with the immunities of a "quasi-arbitrator." It would also seem to follow that under similar circumstances an architect no longer owes a duty of fair and impartial treatment to the builder. The position raises very important questions not only with regard to the position of the architect but also as to the position of the building owner and building contractor respectively.

These circumstances, Mr. Snell said, point to the necessity of some revision. It would be an advantage if we could evolve a shorter document, with all its clauses in proper sequence and without repetition or overlapping. It is mainly a question of careful drafting.

The two points with which the author set himself to deal were (a) the employment of special tradesmen as sub-contractors, and (b) the effect of the arbitration clause.

Sub-contracts.

In modern contracts it is not unusual to sub-let carting, plastering, plumbing, slating, etc. Possibly the arrangement makes for better work, especially if the sub-contractor is himself a master craftsman. As architects, we are concerned only to know that the sub-contractor can and will do the work properly. We do not interfere with the financial or any other arrangement between the parties. We stipulate only that our specification and drawings shall be followed, and that the contractor shall not thereby contract himself out of his liabilities under the contract with the building owner. In other words, we hold him personally responsible for the work of his sub-contractor. There are, however, special works included in buildings which are distinctly recognised as matters which are outside the scope of the building contractor's knowledge and experience, and such as he himself would always delegate to others. Further we insist that special tradesmen or master craftsmen shall be employed. We do not even allow him to select the particular tradesman or craftsman; we reserve that right to the building owner or ourselves as his agent.

As architects, many of us devoutly wish we could dispense with these special tradesmen, but experience teaches us that we cannot do so safely; and we have to put up with the extra trouble and even risk involved. It is too much to expect that the building contractor will see "eye to eye" with us in their selection, and in the amounts to be paid for their special work. To a certain extent, our action relieves them of responsibility, though it may debar them from making the best possible financial arrangements with these special tradesmen; but it should be so worked as to inflict neither loss nor inconvenience to them in the execution of their own work.

In these days of quick building and small profits a dilatory sub-contractor may cause serious delay and inconvenience; and many contractors feel that they should have more adequate means of control, and, more especially, the power to withhold payment. On the other hand, our experience teaches us that if this power is conceded it may be used for inadequate reasons, or for purposes which from our point of view are not legitimate.

It must be acknowledged that in Clauses 20 and 28 this matter is dealt with in a manner which meets the difficulty—almost. Indeed, it seems to hold the balance admirably between both parties. Clause 20 may be regarded as safeguarding the contractor, and Clause 28 the special tradesmen. Nevertheless the provision for direct payment to the latter by the building owner is an awkward

circumstance, which may yet lead to unexpected decisions in a court of law.

My own practice is to nominate the special tradesmen and to fix the net amount to be paid to them. I have a provision in the building contractor's contract that he must pay these special tradesmen in full such amounts as I may certify from time to time, and the amounts so paid are not included in any payment to him by the building owner until he (the contractor) can produce evidence that they have actually been paid. The case of *Crittall v. The London County Council* is sufficient justification for the apparently arbitrary nature of this last provision. My own limited experience leads me to believe that there is no half-way house between taking this strong line and that of leaving the contractor that full control over the special tradesmen which he exercises over his own sub-contractors, reserving to ourselves only the right of nomination and fixing the price to be paid for the work. I am not at all sure but that the latter is under all circumstances (and more especially in our interests) the better of the two methods; but I have had no experience of it.

Arbitration.

Perhaps the most serious defect of these conditions is that the architect is reduced to the level of mere agent for the building owner. He is deprived of judicial powers. It is a position which we think—to quote again from the memorandum referred to—"unfair to the contractor, not in the long run to the interest of the building owner, dangerous to the architect, and derogatory to the dignity of our profession." This dual position so long held by the architect has been challenged. It is an inconvenience in the eyes of a certain class of building owner, and an offence to his legal advisers. On the other hand, his Majesty's judges have generally upheld it as eminently reasonable.

It seems that lawyers are obsessed with the idea of "agency" in the architect's position, and to speak frankly I think they will always do all they can to deprive us of those judicial functions which they consider can only be exercised by members of their own profession. It is a very natural opinion, and not by any means based on selfish considerations. Their training and experience give them a better grasp of the principles of law and equity. Where, in our opinion, they fail is in their limited knowledge of the conditions under which a building is conceived and carried into execution, and their failure to perceive that supervising building work is in fact one long arbitration.

In the old form of contract, our final certificate was given this character of an award from which there was no appeal (except on grounds of fraud or collusion) by either party. On the whole the arrangement worked well, and it certainly did prevent a good deal of contention as between building owner and building contractor. In the present form no decision of the architect binds either party, and certainly not the final certificate. The architect is reduced to the position of mere agent to the building owner, and as such may be sued for exercising his judgment in a way which may not be endorsed by the arbitrator. The position is one of great difficulty; for it seems we can never be certain how far we can be made liable for any act or alleged default under a contract.

The building owner's case is that he has agreed to pay a certain sum for a

*Extracts from a paper read before the Royal Institute of British Architects, April 15th.

building constructed according to definite plans and instructions; and he is entitled to the exact fulfilment of the contract. He relies on the architect to see it is so fulfilled, and pays him for so doing. At this point we join issue with him. We say that the remuneration we receive is not sufficient to pay for the close and constant supervision which alone would enable us to say with certainty that every part of the contract has been fulfilled. Our supervision can only be occasional and general; and this is so far recognised that it is usual for the building owner to employ a clerk of works for the necessary daily and indeed hourly supervision of the work. It follows that our certificate can only mean that to the best of our knowledge and belief—gained from such general inspection—the work has been properly executed. Under these circumstances, and provided the architect's immunity is preserved, it seems reasonable that either party should have the right to question the Final Certificate; although I believe that in the long run, and in most cases, mutual acceptance is in the best interest of both parties. Immunity for the architect is however essential, and without it we are faced with very serious responsibilities for which we are very inadequately paid.

Failing the practicability of immunity, there are—as far as I can see—but two courses open to us—that is, either to restore our position as sole arbitrator (which gives us a measure of safety), or to employ, pay, and be responsible for, the clerk of works; and insure against our responsibility at Lloyds or elsewhere. We should, however, have to raise the amount of our commission to meet the extra cost to us.

I do not suggest scrapping the present Conditions of Contract; but they might certainly be shortened, simplified, and divested of the underlying suggestion that building is—as a genial member of the Institute lately put it to me—a “rogue's trade.” Building owners and contractors alike may well ask themselves whether on economical grounds alone it is worth while to quarrel. A careful examination of the records of building actions affords convincing evidence that in most cases only the lawyers and expert witnesses benefit.

DISCUSSION.

Mr. Harrison, proposing a vote of thanks, said the Institute “Conditions” had taken five years to elaborate, and personally he thought they were good. He dwelt at considerable length upon the papers read by Mr. White and Mr. Greenop before the Institute in December last, contending that the cases adduced by the lecturers revealed no new responsibilities for architects. With reference to sub-contractors, the speaker mentioned incidentally that by the Conditions of Contract an architect only had power to nominate, select, or approve. In conclusion, Mr. Harrison said he thought that the only remedy for the present unsatisfactory condition of affairs was for the architect to give more strict attention to the business side of his profession, and to cultivate more business-like habits. When it had been necessary to do business by telegram or telephone, for instance, in order to remove any possibility of misunderstanding, an architect would be well advised to dictate a letter at once saying how he intended to act. To ensure proper supervision, architects might charge a higher fee and employ their own clerk of works. The fact remained that architects were agents in the eye of the law, and as such were

liable to be called to account for any neglect in services rendered to clients.

Mr. Atkin Berry seconded the vote of thanks, commenting adversely at some length upon certain of Mr. Greenop's conclusions.

Mr. William Woodward said he believed there were no newer responsibilities for architects; there was, however, more desire on the part of clients to bring into the law courts those cases which forty or fifty years ago were settled outside. The Conditions of Contract, he noticed, did not give the architect power to withhold payment from the general contractor until he (the architect) had seen the receipt of the sub-contractor, a power with which he thought the architect should be invested. With regard to arbitration, he (the speaker), if he were a contractor, would not sign a contract where the architect himself was left sole arbitrator. There was always the grave risk of personal bias.

Mr. Douglas Mathews said it was largely through workmen's want of interest that so many deficiencies occurred in modern work. If an architect could not be trusted, and had to introduce outside arbitration whenever a dispute arose, a building would never be finished.

Mr. Love described the practice with regard to contracts in foreign countries, mentioning that in Spain two architects were employed on one building—one for the builder, and the other for the building owner. He suggested that in England architects might with advantage entrust the duties of clerk of works to an office assistant.

Mr. H. D. Searles-Wood said that a contractor's responsibility ceased when he got his final certificate, but the architect was liable for a period of six years.

Mr. Blanco White said an architect had no authority to vary plans without the building owner's consent. He suggested that an architect should guard himself by inserting in an agreement a clause to the effect that plans would perhaps be varied as the work proceeded from time to time. With regard to sub-contracts, architects, in asking for tenders, should say whether the contract would be with themselves or the contractors. All contracts, too, should be signed “I accept,” and not “on behalf of.” As to whether an arbitrator would be liable to an action, in so far as he was an agent he would be.

Mr. Alan Munby, Mr. G. E. Nield, Mr. Douglas Wood, and Mr. Matt. Garbutt, having spoken,

Mr. Max Clarke suggested the insertion of a clause giving the architect power to demand the production of receipts of payments to sub-contractors. He thought there was too much trouble about the form of contract and not enough about the carrying-out of buildings.

Professor Blomfield, in summing up the discussion, said, with respect to sub-contracts, that he made a practice of having, not a special sub-contract, but a direct contract. Architects, he felt sure, did not want to avoid their legitimate responsibilities; but they did certainly resent having to pay for things which they could not possibly control.

Mr. Saxon Snell, Mr. W. Henry White, and Mr. Edward Greenop then replied.

The Lord Lieutenant of Ireland has promised to be present at the annual dinner of the Royal Institute of the Architects of Ireland, which has been fixed for May 7th.

ARCHITECTS' BENEVOLENT SOCIETY

The sixty-second annual general meeting of the Architects' Benevolent Society was held at the rooms of the R.I.B.A., 9, Conduit Street, on April 11th, Sir Ernest George, A.R.A., in the chair.

On the motion of the chairman, the annual report of the Council (from which extracts are here given), was adopted:—

“In submitting their sixty-second annual report, the Council regret that they have again to record a diminution in the amount of the Society's subscriptions. The difference is small as compared with last year, but it is significant in view of the fact that a special letter of appeal was issued by the President in October to over five thousand architects practising in the United Kingdom. The result of the appeal, although scarcely realising anticipations, increased by new or additional subscriptions the total amount received by £41 18s. 6d. while the sum of £124 8s. 6d. was added to the Society's capital from donations received in response to the appeal. The Council feel that the number of contributors on the Society's books (the total number of subscribers is 512) is inadequately representative of so large a profession. It is felt that the subscription list must mainly rely for its support upon the efforts of individual members and upon the corporate action of the metropolitan and provincial architectural societies.

“During the year the sum of £1,03 was distributed in relief; £245 being paid to pensioners, while £786 was disbursed in grants among seventy-four applicants. A pension having become vacant, various applications were considered, and the annuity was finally granted to the widow of an architect.

“The total amount received in subscriptions was £707 5s. 6d. (as compared with £716 14s. received in 1910); while the amount received in donations was £296 14s. (as compared with £109 15s. received in 1910), including Professor Aitchison's bequest of £90. With the amount carried forward from last account together with the donations received during the year, the Council were enabled to increase the Society's investments by the purchase of £500 Queensland 3 per cent. Inscribed Stock at a cost of £42 14s. 6d.”

Sir Ernest George announced, among other recent contributions to the Society's funds, a legacy of £200 from the late Mr. T. M. Rickman.

The Council were elected as follows:—

President, the President of the R.I.B.A.; vice-president, Mr. Henry L. Florence; Sir A. Brumwell Thomas, Mr. Walter Cave, Mr. F. W. Hunt, Mr. Reginald St. A. Roumieu, Mr. Lewis Solomon, Mr. T. E. Colcutt, Mr. George Hubbard, Mr. E. E. I'Anson, Mr. A. Saxon Snell, Mr. W. L. Spiers, Mr. Henry Lovegrove, Mr. E. Arden Minty, Mr. Rowland Plumb, Mr. William Woodward, and the President of the Society of Architects.

Mr. W. Hilton Nash and Mr. Percival Currey (who was absent through illness) were thanked for their work during the past year, and re-elected respectively as hon. treasurer and hon. secretary.

A vote of thanks was accorded to Mr. C. H. Brodie and Mr. Henry Lovegrove for auditing the Society's accounts. After further expressions of thanks to Mr. Dircks for his conduct of the Society's affairs, and to Sir Ernest George for presiding, the meeting terminated.

NEWS ITEMS.

Change of Address.

The British Reinforced Concrete Engineering Co., Ltd., announce that they have moved their headquarters from 196, Deansgate, Manchester, to 82, Victoria Street, Westminster.

Cleaning Winchester Cathedral.

Winchester Cathedral will be closed to the public from Monday last, April 22nd, to May 4th, inclusive, in order that the building may be thoroughly cleaned after the six years' work of repair.

Bath Attendants as Painters.

The Manchester Master Painters' Association have decided to support the protest of the operatives against the action of the Baths Committee of Manchester Corporation in employing bath attendants to do painting work during the slack season.

Extension of Hampstead Garden Suburb.

The success which has attended the Hampstead Garden Suburb, particularly on the co-partnership side, has led to the Co-partnership Tenants' Society's obtaining another 300 acres, making in all over 450 acres in possession of the society. The whole of this will be developed on modern town-planning lines.

An Architectural Exhibition.

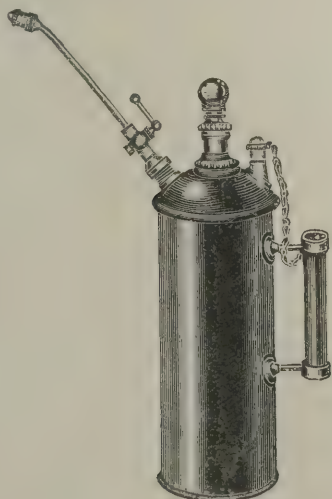
The Allied Artists' Association, 67-9, Chancery Lane, London, W.C., announce that they desire to make architecture a salient feature of their fifth annual London Salon, which will be held next July in the great arena of the Royal Albert Hall. The exhibits may consist of plans, models, drawings, or photographs of elevations.

"Georgian" Drawing Pencils.

We have received from Messrs. W. H. Smith and Son a batch of "Georgian" drawing pencils. At the present day one is accustomed to use black leads of the highest quality, and we find these pencils to be up to the best standard. They are admirably finished, and the name printed on each is itself an example of good lettering. They are obtainable in nine grades—namely, HB, B, BB, BBB, F, H, HH, HHH, and HHHH.

Exterminating Insect Pests.

Messrs. R. Sumner and Co., Ltd., manufacturing chemists, Liverpool, have drawn



SUMNER AND CO.'S SPRAYING APPARATUS.

our attention to a new spraying apparatus they have just brought out for the effective distribution of their well-known insect exterminator solution "D," as described in our issue of March 20th, p. 311. The sprayer (of which an illustration is here given) is operated on the same pneumatic principle as the original one, but holds nearly four pints instead of one. When a large area (such as the steerage quarters of a ship, or a block of buildings) has to be treated, the increased capacity of the new sprayer is a distinct advantage, as the labour is thereby reduced to a quarter. Messrs. Sumner and Co. have in this later machine carried still further their principle of simplification of the parts, and with it there is practically nothing to get out of order. This sprayer is very strong and particularly well made. We are informed that solution "D" is now being used by most of the leading shipping companies, public-health authorities, and many property owners, for the destruction of bugs, cockroaches, and other insect pests.

Affairs of a Well-known Building Firm.

At the Salford County Court, on April 15th, Messrs. William Brown and Sons, the well-known builders and contractors, of Trafford Road, Salford, were granted by his Honour Judge Stanger an immediate discharge from bankruptcy. Mr. J. Grant Gibson, the Official Receiver, reported that the first meeting of creditors was held in September, 1909. The amount involved was £72,721.

St. James's, Alperion.

The Bishop of London consecrated the new Church of St. James's, Alperion, on Easter Eve, this being his first public appearance since his return home from the consecration of Khartoum Cathedral. The new church, which lies between Wembley and Perivale, provides accommodation for 750 persons, and consists of nave and aisles, a morning chapel being upon the south side of the chancel. The church is built of brick, with red dressings and Casterton stone externally; Farleigh stone being used internally, with plastered walls. The roofs are covered with hand-made tiles. A narthex extends over the west front. The cost is about £7,800. The architect is Mr. William A. Pite, F.R.I.B.A.

Dutch Architecture.

At the last meeting of the Birmingham Architectural Association the vice-president (Mr. G. Salway Nicol) read a paper on the Association's visit to Holland. The great charm of Dutch buildings, he said, is due to the fact that they are such a complete expression of the character and ideals of the people. Their domestic work particularly has much to teach us in the simple and direct way they obtain their effects. For their more important buildings, such as the "Stadhuis" at Middleburg, they generally employed a phase of the Gothic style directly inspired by similar buildings in Belgium, but at the same time the detail is full of native feeling. The Abbey buildings at Middleburg, and the Town Hall and Church at Veere were shown by many sketches made by the members, and the great influence of Dutch work in England in the seventeenth century was pointed out.

LONDON SOCIETY OF MASTER DECORATORS.

At the general quarterly meeting of this association, held at the Holborn Restaurant, Mr. John Anderson, president, in the chair, the first business was to invite the views of the meeting with reference to the National Insurance Act, and to receive the report of the Special Committee on the subject.

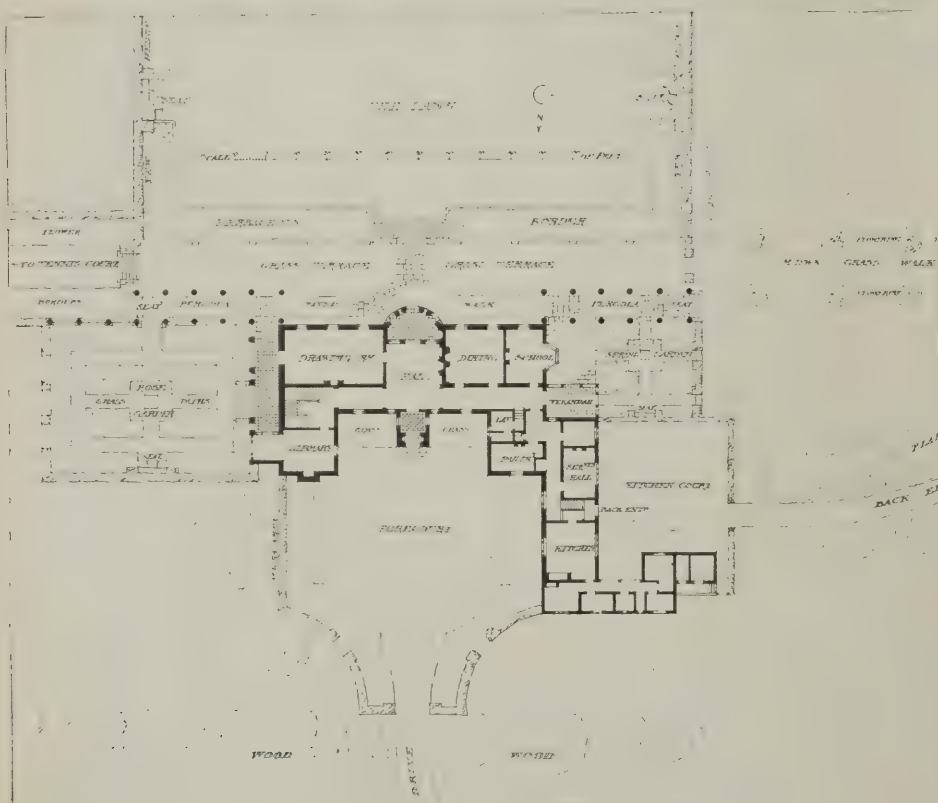
The first objection taken to the Bill was that it had not received adequate discussion before it was passed.

A member asked whether it would not be a waste of time to discuss the matter now that the Bill had become an Act, but the President held that a discussion would be useful; there were other associations who were taking action, and it might be advisable to join with them.

Mr. Renshaw thought that the Government should be told that this association was not in favour of the Act, because it placed very onerous conditions on all masters and employers of labour. He moved the following resolution: "That this meeting of the London Association of Master Decorators hereby resolves to join hands with the Employers' Parliamentary Association at Manchester and any trading or employers' associations having similar views, to ask for a full and proper reconsideration of the National Insurance Act before it is put into force, in order that the views of employers generally and workers may be put before Parliament before the 15th of July." This resolution was carried unanimously. After further discussion, it was agreed to confer with the London Master Builders' Association, to see whether there was any possibility of taking joint action in making representations to the Government.

A discussion ensued on the Education Committee's report with reference to the action which should be taken by the society in response to a London County Council circular on technical education for painters and decorators, in which questions were asked and suggestions invited. It was agreed that the Education Committee should continue its work, and the hope was expressed that members would make up their minds to contribute towards a scholarship fund.

The President said the next business was to resolve as to the issue of employment and discharge cards. The Committee had been considering the question of issuing to men employment cards, which they could carry about with them, and on which would be entered the fact that they had been working with a certain firm for a certain length of time, so that it might be assumed they had some proper and practical knowledge of the trade. At the present time men simply said that they were acquainted with the trade, when they were found to know very little about it. If such a card as was proposed were insisted upon it would give some indication of the fact. The Council had had some forms printed, and estimates obtained for printing a large quantity. It was proposed not only to issue those of the association, but to write to other master decorators who had not yet joined their body, asking them if they would issue the cards to their employees, for their own satisfaction. It was not intended to give the men characters in this way. In the first column would be the name and address of the man, and other columns would show the date of his employment, his rate of wages, the date of his discharge, etc. He felt sure that a man who could prove these facts would



Plan of House and Garden.

"SHORNE HILL," NEAR TOTTON, HAMPSHIRE. ERNEST WILLMOTT, F.R.I.B.A., ARCHITECT.

get the preference. There was no need to trouble this meeting with the details, and it would perhaps be best to leave the committee to proceed on the best lines they could, unless members wished to see the form proposed. It would be a linen card, so that it could not be readily torn. The cost would not be great, and they would be issued to the firms at the actual cost.

Mr. Renshaw said he was glad it was intended to issue the cards to masters who were not members of the association

as well as to members. It might mean an expansion of membership. Another question was, whether the committee thought of issuing the card to the Painters' Union, and whether that union was likely to raise an objection.

The President considered that the suggestion to communicate with the Painters' Society was a good one; they could have no valid objection.

Mr. Dakin pointed out that if the suggestion to send the card to all the master decorators who were not members of the

association were carried out it would mean a big expense. For each workman in the trade to have one would mean something like £100. One must go to work carefully about that.

The President said there was no idea of giving them away.

Mr. Renshaw thought a better way, before contracting a large expense, would be to put it to the union whether they were willing to co-operate, and if so, send a sample round and ask them if they would be willing to pay for them.

The proposal was agreed to.

The President said the next business was the question of co-operating with the Paint and Varnish Society in the reading and discussion of papers. Provided the members agreed to the idea, it did not need much discussion, for, with that approval, the committee would take steps to arrange meetings. The papers would be read by members of both associations for mutual benefit. This proposal was agreed to.

CORRESPONDENCE.

"Some Notable Buildings in Budapest."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR.—Your excellent article on this subject will give your readers a good idea of the architectural beauty of the capital of Hungary. It is true, as you state, that this city has been recently rebuilt, yet at the present time, building operations on an unprecedented scale are going on in the central part, which, on completion, will greatly add to the magnificence of the city. This activity is due to the fact that the civic authorities offered remission of taxation for a long term in respect of buildings erected within a definite period.

Now, may I in a friendly spirit point out a few spots on the sun? Although I have known Budapest for many years, I did not, when first reading your article, understand what was meant by "Donauzeile" and "Kettenbrücke."

For these are German names, and such are not generally or officially used in Hungary. Equally unfamiliar are "Strasse" and "Platz."

When writing about Hungarian places for British readers, I suggest that either Hungarian or English names should be used. This has been done recently in Bradshaw's Guide, and by several map publishers.

In stating that Budapest is the capital of "Austria-Hungary," you are too kind.

Budapest is the capital of Hungary, just as Vienna is the capital of Austria.

There is no capital of "Austria-Hungary," because there is no one State or Empire to which that name can be correctly applied. In this country, we have erroneously supposed the existence of such an Empire; yet really there is no Austro-Hungarian territory, there are no Austro-Hungarian subjects, no Austro-Hungarian laws. Where, then, is the Empire?

Austria and Hungary are free and independent States, which, for the purpose of mutual defence, have agreed to unite their naval and military forces and to be represented in foreign lands by the same diplomatic agents. But in all the agreements which have been made, Hungary has expressly declared that in agreeing to this limited joint action, she did not relinquish any of her independence, and did not thereby become part of any other

State or Empire, but would remain an independent State of equal rank with Austria.

And this is her status at the present day.

W. H. SHRUBSOLE.

'We have [received with Shrubsole's letter a series of five well-illustrated booklets, entitled respectively: "Budapest and its Environs," "The Northern Highlands of Hungary," "The Hungarian Lowlands and Transylvania," "The Transdanubian District and the Hungarian Coast." Each booklet contains about fifty pages, and more than fifty photographic illustrations, and is enclosed in an artistic cover. Either or all can be obtained, gratis and post-free, from the Director of the Royal Hungarian State Railways, Ardrassy ut, 73, Budapest, Hungary.]

The Architectural Association Sketch Book.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I notice in your issue for April 17th, in a review of the "Architectural Sketch Book" for 1911, the following passage occurs: "The 'First Quarterly Part, 1911,' which is the official description of the last issue of the Sketch Book, etc." May I point out that a letter was sent you with the plates stating that they comprised the complete volume for 1911?

F. R. YERBURY,
Secretary, The Architectural Association.

THE CORROSION OF STRUCTURES.

In considering the design of structures it is usual to base the first estimate of strength upon the assumption that the materials will remain unaltered; and afterwards to allow a factor of safety to take account of the ravages of time. If the structures contain iron or steel exposed to wind or water, corrosion is to be expected sooner or later, and the designer is forced to face the difficulty in one or more of three ways. He can increase the weight of the metal to provide for surface changes, he can prepare the surfaces and apply preservatives, or in certain cases he can allow for the cost of a staff to keep the structure under observation and to maintain the surfaces. The causes of corrosion are now fairly well known, but the best way to prevent corrosion is not so well understood, and a great deal of research is necessary before the conditions giving the best chances of durability can be regarded as settled. In many instances it is impossible to avoid exposure of iron and steel surfaces, but engineers would do well to consider whether special precautions cannot be taken at reasonable first cost with vital parts of such structures. For example, although it may be difficult to protect the interior of iron pipes it may be quite practicable to replace iron valves in the pipe-line by a more durable metal. Again, it is often possible to reduce the evil of corrosion considerably by employing cast iron instead of wrought iron, and

there is no doubt that reinforced concrete is destined to be increasingly adopted in specific cases where corrosion is to be expected with bare or painted metal. Among the most curious instances of corrosion must be included the complete decay in some localities of imperfect alloys of the German silver group, and it is well known that copper wire in some circumstances fails in an obscure manner. —(From the "Times" Engineering Supplement.)

"SHORNE HILL," NEAR TOTTON, HAMPSHIRE.

This house is set among well-wooded surroundings, the approach road being cut through a small wood on the estate. The ground slopes to the south and south-east, a glimpse of Southampton Water being caught from the eastern stoep. The walls are of brick, finished with smooth plaster and whitewashed. Chimneys are of Basingstoke bricks (2 in.) and roofs are of local tiles. By desire of the owner, there is a suggestion of Cape Dutch in the style. The architect was Mr. Ernest Willmott, F.R.I.B.A., of London, to whose design also the garden has been laid out. The principal doors and floors and the main staircase are of oak; the wood beams and ceilings, as well as some of the bedroom doors, being of Oregon pine stained with "Solignum." Messrs. Wm. Johnson and Co., Ltd., of Wandsworth Common, were the general contractors.



"SHORNE HILL," NEAR TOTTON, HAMPSHIRE; GARDEN FRONT. ERNEST WILLMOTT, F.R.I.B.A., ARCHITECT.

PICTURE EXHIBITIONS.

The Fine Art Society.

At the gallery of the Fine Art Society there is a new collection of the grand but somewhat gloomy etchings of Mr. Brangwyn, who produces his effect mainly by great opposed masses of light and dark. The effects are such as, to say truth, we never see in connection with actual buildings in actual light; but it may be admitted that it is one of the functions of etching, as the finest form of Black and White art, to extract from a subject the most powerful effect of which it is capable. The finest etching in the collection is "The Breaking-up of the *Duncan*," showing the hull of an old ship towering up to the top of the picture above a low sight-line. "Cannon Street Station" is a powerful effect made out of an ugly subject; "The Bridge of Sighs" is a fine treatment of that familiar erection; and there is what might be called a grim power in the small etching of "The Bridge of Alcantara"—the Alcantara of Sicily, not of Spain; but one may ask whether in Sicily any such gloomy effect is possible. There are various water-colours, some of which seem to have been preliminary studies for the composition of the etchings; some are groups of working men called "a set of decorative drawings"; decorative they may become when treated in colour; in their present form they hardly merit the adjective. The large etching of "The Crucifixion" we dislike extremely; it is a piece of brutal realism. Artists who treat so tragic a subject in religious history should do so with some feeling for its pathos and significance.

The Leicester Galleries.

At the Leicester Galleries there is exhibited, in the first place, Mr. Walter Crane's portrait of himself painted for the Uffizi Gallery at Florence, where a collection of portraits of eminent artists, mostly painted by themselves, has been long in course of formation. The portrait is a half-length showing the artist in profile, with palette in hand at work on a picture. It is rather hard in style, but is a good likeness and is dignified in expression and design. Accompanying this, in the outer room, are a number of Mr. Crane's line drawings of illustrations of Spenser's "Faerie Queene" and some modern books. Most of these are well known; but there is also an interesting collection of early water-colour and gouache drawings done in Rome and South Italy many years ago, and not before exhibited. Many of these are architectural subjects, and the Roman subjects formed part of a group at the recent exhibition in the Castle of St. Angelo; ten of them were purchased by the Italian Government for the Corsini Gallery in Rome.

In the next room is a collection which gave us an agreeable surprise, Mr. Henshall's series of water-colours of "Cottage Folk." Mr. Henshall is a member of the Society of Painters in Water-colours, whose pictures at their exhibition we have never been able to like; they have been too pretentious and stagey in style. But the business of endeavouring to depict the simplicity and sometimes the pathos of the life of the poor seems to have been entered into by the artist with a sincerity and an absence of all mere striving after effect which give quite a new kind of spirit to his work; his children and old people are delightfully natural, and the groups are all well composed, and in some instances the small pictures show remark-

able qualities of colour. It seems as if Mr. Henshall's gift really lies in painting small pictures of this class; they are far superior to the larger and more ambitious works by him which generally figure at the Water-colour Society's exhibitions.

But the principal attraction at the Leicester Gallery is undoubtedly the series of water-colour sketches—they are mostly not more than sketches—by Mrs. Laura Knight. The sketches of ballet-dancers, "Impressions from Les Sylphides," we do not care for; they are cleverly done, of course, but serve chiefly to show how very ungraceful ballet-dancers' attitudes for the most part really are. The real successes of the collection are the broad, bright, airy sketches of landscape, with generally a figure or two, not worked up much in detail, but always with a sense of composition and of the expression to be derived from the design and balance of the figures, and their place in the landscape. These are works of true artistic genius. Mr. Harold Knight's contributions to the exhibition are mostly finished pictures, good in treatment and suggestive in design. But it is in Mrs. Knight's work that the real value of the exhibition consists.

The Goupil Gallery.

The Goupil Gallery contains collections of the works of three artists. Of those by Mr. Wolmark we prefer to say as little as possible; there is nothing among them as preposterous as the exhibit at the Grafton Gallery called, if we remember right, "A Decorative Study" but we dislike them wholly. The water-colours by Mr. David Neave, in the centre room, include some very good landscapes, especially those dealing with water and shipping. "After the Thunder" is a very true study of weather effect. In the third room are oil-paintings by Mr. W. J. Leech, R.H.A.; "Visions of Switzerland, Venice, etc.," somewhat visionary they are in style, but the artist has a fine perception of effect in snow scenes, as in "Blue and White"; "Glion"; "Above the Mists"; and "The Mountains." "The Sea, from the Lido," is a good bit of sea study; but in general, Mr. Leech's successes seem rather limited to one type of effect, which he treats very well.

The Indented Bar System.

The Indented Bar and Concrete Engineering Co., Ltd., Queen Anne's Chambers, Westminster, show, in their recently issued 1912 catalogue, a large number of views of works in which their system has been adopted, as well as several diagrams and other illustrations in elucidation of the system. The indented bars are rolled in two forms, respectively known as "rounds" and "squares," of which the weight per foot is in each case approximately the same as that of a smooth square or round bar of the same nominal size. In accordance with the ordinary specification, the bars are rolled of medium steel, with an elastic limit or yield point of 50,000 lb., and an extension of not less than fifteen per cent. in a length of 8 in.: that is to say, the elastic limit is nearly twice as great as that of ordinary mild steel. The breaking strength is 90,000 lb., or 40 tons per square inch. A considerable saving in the weight of steel required for a given strength is therefore claimed, while, it is further stated, the factor of safety can be increased without extra cost. The adaptability of the system to very various classes of work is well shown by the illustrations included in the catalogue.

IPSWICH BUILDING TRADES
ASSOCIATION.

The annual dinner of the Ipswich Building Trades Association was held last week at the Crown and Anchor Hotel, when the President (Mr. B. Bird) occupied the chair over the largest number of members and friends who have sat down at the annual gathering.

The usual loyal toasts having been duly honoured, Mr. R. Smyth proposed "The Mayor and Corporation of Ipswich." He suggested that if the Mayor and Corporation had a surplus in their funds at the end of the year, the builders of Ipswich should be the first men to be partakers of it, because the builders of Ipswich had been hard hit during the last few years, owing to the stringency of the contracts. He appealed to the Council to give the town a better appearance than at present, for the main entrance from the station was like a scrap-book owing to the great number of hoardings.

In response, the Mayor (Mr. F. B. Rands) said that the Corporation were not responsible for the hoardings, but steps were being taken at the present time for the Corporation to have a larger control than at present over such hideous erections as were being put up in various parts of the town.

Mr. C. E. Whitmarsh, in proposing the toast of "Success to the Ipswich Building Trades Association," said that in the building trades there were broad outlines in which co-operative agreement might be reached without interfering with the individuality of the man, because, however close they might draw rules in any association, they would find that the individuality of the person must be allowed for. There was one way in which they could co-operate, and that was in the raising of prices to a living limit, because at present it was all work and no profit. The trade engaged the second largest body of men in the country, but in no trade was the profit so little in comparison with the wages paid, and it was on lines similar to these that associations such as theirs could do a great deal of good. To use the language of the day, it was time the builders struck for a minimum profit.

Mr. A. Sadler, who was called upon to respond, said that the association was a useful institution, and worthy of more support than it got. They had made some little change during the last year or two in introducing other subjects than purely business matters, educational subjects connected with the trade, very interesting and very instructive to all, and they were finding that they were of great assistance, helping them to take a keener interest in their work.

Mr. E. E. Saunders, who also responded, said that at one time it looked as though the association would fall through, but the widening of its basis to bring in kindred trades had given it a new lease of life.

Mr. A. W. Warner proposed the toast of "The President and Officers," and Mr. Buckingham Bird, in response, said that in the building trade proper few had retired in affluence, and quite half had finished up in the Bankruptcy Court, or dependent on charity. One of the great difficulties of the trade was that no builder could say what proportion of profit he was going to get as compared with the wages he paid.

Mr. C. Borrett, hon. secretary and treasurer, said that financially the association was in a good position.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

Bending- Moment Formula.

It has been several times stated in this journal that the commonly accepted formula for bending moments in

beams, $\frac{wl^2}{12}$ should not be regarded as a rigidly fixed law, but that it should rather be taken as depending upon variable conditions. This view is emphasised by the authors of an admirable manual on "Reinforced Concrete Design," by Oscar Faber, B.Sc., and P. G. Bowie, assistant engineer to Messrs. Trollope and Colls, Ltd., London (London: Edward Arnold, 41 and 43, Maddox Street, W.; pages xx + 332, 8½ in. by 6 in., price 12s. 6d. net), which is apparently the most recent of the rapidly growing number of treatises on the subject. The ratio of live to dead load, the relative stiffness of beams and columns, etc., are in this treatise subjected to mathematical treatment with the view of arriving at suitable formulæ taking them into account; and the appendices in which these calculations are shown would alone be a sufficient justification for the issue of this treatise; which, however, comprises much else that is valuable.

Pest-Proof Material.

There is, for instance, an exhilarating freshness in the style. Thus, in enumerating the special advantages of reinforced concrete construction, the authors not only mention rot and the attack of pests such as the *Teredo navalis* in marine structures, and the white ant and such vermin above ground, but add that "in some cases *Homo humanus* might justly be included in this list, as he not infrequently plays havoc with any removable timber"—an observation of which certain effects of the coal strike will probably reveal the truth and beauty. Again, the authors wisely and justly admit that the claim of reduced first cost cannot be made in all cases. "It may be taken for granted, however, in this age of commercialism, that where it [reinforced concrete construction] has been adopted, it has always had a reduced ultimate cost, when its absence of upkeep and other properties are taken into account. It is not now the custom to erect a structure in the best possible material as well as we know how, simply for the joy of doing a thing supremely well—this belonged to the old-world civilisation of Greece, and is, unfortunately, foreign to us."

The Principle Re-stated.

The fundamental principle of reinforcement is well expressed: "To supply the requisite tensile strength to our material, steel bars are embedded in the concrete where tensile stresses are anticipated—for instance, at the underside of a freely supported beam. If this is done consistently, we have, qualitatively, the key to the greater portion of reinforced concrete design, and it merely remains to calculate, from ordinary scientific principles, the quantity of such reinforcement required. It should be noted, however, that the mere embedding of steel bars in the concrete would not produce a reliable com-

posite material, except for two extremely fortunate circumstances, which were probably not realised by the pioneers of its use. The first is the fact that concrete contracts slightly during setting in air, and, in contracting round a steel bar, holds it tightly in such a way as to prevent the steel from slipping, even when no hooks or even roughnesses exist on the bar. The second is the fact that steel and concrete have practically identical coefficients of expansion, and consequently a uniform change of temperature does not involve temperature stresses in the two component materials." That is clear enough, although a foreign reader might find himself in momentary doubt of the precise interpretation of "even roughnesses."

Specialists' Calculations.

The book is divided into four parts, the first part dealing with the calculation of stresses under known forces and moments; the second with the design of columns; the third with the design of beams and slabs; and the fourth, entitled "Applications and General Notes," contains chapters on retaining walls, specifications, quantities, and notes on practical applications of reinforced concrete, and on the specialist engineer and the contractor. In the chapter last denoted, there is a further specimen of the somewhat grimly ironical humour that the authors occasionally use with terse and telling effect. They contend that only those who have made a life-study of reinforced concrete are fully aware of the extent to which the published calculations of specialists can be dangerously misapplied. "Such reports," they say, "as that of the R.I.B.A., and the many regulations, particularly those issued in France, have undoubtedly done much to lead engineers along the right lines. But it is a long step from that to the idea that every man should now design his own concrete work. It is not denied that he can, and that if he makes his factor of safety sufficiently large to cover 'factors of ignorance,' his work will stand, provided some important consideration has not been inadvertently ignored. But even so, his work will be more expensive than that of the specialists, since on the one hand he has to find by laborious methods what a specialist has trained himself to see almost instinctively; and, secondly, because his 'factor of ignorance' must be greater, and will therefore entail the use of more material to secure an equally safe structure." For these and for other reasons, the authors are confident as to the assured position of the specialist, whose "mastery is as great as ever," and who "still holds valuable information on questions which outsiders have not yet dreamt of, and [who possess] answers to difficulties which they brave in ignorance only." There can be no doubt that in the main this contention is true, and is not greatly discounted by the fact that it is put forward by specialists.

Conditions of Success.

The section under the heading "The Contractor," is valuable as embodying deductions derived from close observation

in practice. It is held that serious error may be made unwittingly by a conscientious contractor; and, "again, the drawings supplied by the specialist may not be sufficiently clear, especially when it is remembered that they are to be read by a foreman with no particular qualifications for solving Chinese puzzles"; and the final word is to the effect that the conditions ensuring the least danger from bad workmanship or want of understanding between drawing office and works may best be secured when a competent engineer employs his own staff of foremen thoroughly trained to his designs and methods. This tendency to discussion is more or less observable throughout the book, and constitutes one of its most valuable and most distinctive features. It is never carried to excess, and never leaves the reader in doubt as to the character of the conclusions which the authors wish to enforce—giving the comfortable impression that the authors are very clear and decided in their own minds, and supplying definite reasons for almost every step that is described. The diagrams, of which there are about 150, are very clearly drawn, with reasonably fat lines instead of the eye-torturing spider-filaments which engineers most commonly affect; and the R.I.B.A. reports on reinforced concrete are included. The book seems to us, after a cursory examination, to realise very happily the intention of the authors to produce a thoroughly practical guide, not for the desk student, but for the man who would conscientiously combine theory with practice.

THE CONCRETE INSTITUTE.

A meeting of the Concrete Institute took place at Denison House, 296, Vauxhall Bridge Road, Westminster, S.W., on April 11th, Sir Henry Tanner, C.B., I.S.O., F.R.I.B.A., president, in the chair.

The following were elected members:—H. C. Forder, designer in reinforced concrete, Westminster, S.W.; P. L. Francis, designing engineer, Westminster, S.W.; H. Haughton, assistant structural engineer, Westminster, S.W.; C. B. Ife, structural engineer, Westminster, S.W.; R. G. Lovell, architect, A.R.I.B.A., M.S.A., Eastbourne; T. de Courcy Meade, M.Inst.C.E., F.S.I., etc., City Engineer, Manchester; E. Meredith, architect and surveyor, Stud.R.I.B.A., Llandrindod Wells, Wales; J. E. Mundell, architect, etc., A.R.I.B.A., F.S.I., London, E.C.; A. von Osenbruggen, designer in reinforced concrete, Westminster, S.W.; A. O. Pitt, designer in reinforced concrete, Westminster, S.W.; F. Radcliffe, engineer and manager of reinforced concrete dept., Little Royd, Huddersfield; W. Cawthorne Thorneley, designing engineer in reinforced concrete, Westminster, S.W.; B. C. Wheatcroft, manager of Armoured Tubular Flooring Co., Ltd., Westminster, S.W.

It was announced that the Council had also admitted ten students.

A paper on "The True Bending Moments of Beams" (from which extracts are given on p. 435) was read by Mr. Maurice Behar, of the Ecole des Ponts et Chaussées.

SURFACING CONCRETE
FLOORS.

BY THOMAS POTTER.

Various methods and materials have been adopted for forming finished surfaces to concrete floors, such materials being mainly of a plastic character, and consisting of fragments of granite, rag, Portland and other stones, with Portland cement. These fragments, reduced by a stone-crusher or disintegrator to pass a quarter-inch or three-eighths mesh sieve or screen, down to the size of very coarse sand, should be washed to free them from the impalpable dust that clings to all materials that have passed through a crusher, and the cement must be of the best quality. If it can be shot out of the sacks and aerated for a time, so much the better.

The proportion usually adopted is 1 part of cement of $2\frac{1}{2}$ parts of the aggregate for the best class of work; and preferably the stuff is laid in one coat, if not more than an inch in thickness, or in two coats if it is more than an inch. The concrete should be screeded straight and true (more especially if the surface material is to be only an inch thick or less), in order that it may be of uniform thickness throughout, otherwise it forms a contributory cause to the unsightly cracks so often seen in surface finishings of this character. It should be laid in alternate squares, chess-board fashion, and not more than 9 ft. each way, to wood screeds temporarily nailed to the concrete. Not less than a day—and a period of two or three days is preferable—should be allowed between the times of finishing the first-laid squares and of joining others to them, as the material expands slightly for a day or so, and then contracts to its normal size. It has been sometimes the practice to oil the edges of the finished squares, or to apply soap lather to prevent ragged appearance in case slight shrinkage occurs. This is not, however, a general practice at the present time. The material should be gently tapped with a steel trowel or wood hand-float as it is being laid, or, better still, with a small wood beater having a long handle, to enable the workman to keep his feet off the soft material. A minimum amount of water should be used for mixing, so that only a small quantity of what plasterers call "fat" may rise to the surface during tamping or beating, but which after a short time sinks or disperses in the mass.

The floor-layers, in order to avoid delay, will sometimes dust the surface with cement to absorb the excess water. This results in a film of neat cement which forms a slippery surface. A similar result may occur when too much water has been used in mixing, the effluent bringing to the surface with it some portion of the cement.

If practicable, it is better to finish the surfacing at the time that the concrete is being laid, so that perfect adhesion may take place; if the finishing is postponed, dirt may work into the crevices of the concrete, and imperfect adhesion result. This observation applies also to simple screeding with cement and sand to obtain a true surface for wood blocks, tiles, etc. Where the cost permits, thin cheap boarding is sometimes laid over the entire surface area after the screeding or floor finish has been done. This costs from 7d. to 9d. per yard, and in many cases is well worth it. Where it is not practicable to do the screeding or surface finishing

simultaneously with the concreting, the latter should be grouted with cement and sand to fill up the crevices; rather than leave them to take in dirt from workmen's boots. For general purposes, there is no object in making the surface material more than an inch thick, and even less will do, but for warehouses and similar buildings $1\frac{1}{2}$ in. to 2 in. in thickness is sometimes adopted. The ugly cracks which frequently occur in plastic floors may arise from the concrete not being laid or finished straight and true, which causes the surface material to vary in thickness and the thin places to be weaker in tension than the remaining portion; or the cracks may arise from some fault in the materials, or from insufficient mixing, or from the faulty character of the concrete beneath; and in the case last mentioned it may be years before they develop. If they are only hair cracks, or "crazing," as it is called, they probably arise from some defect in the surface material, but if larger, from shrinkage or expansion in the concrete. The durability in the latter case is not seriously affected, but the cracks are extremely unsightly, taking all kinds of irregular shapes. If they developed in straight lines, having the appearance of joints in the floor, there would not be so much objection. Where steel joists are used to support concrete floors, or are entirely or partially embedded in the concrete, it is advisable to arrange, if possible, for the joints or joining of the material to come directly over them; for when concrete shrinks, the contraction naturally takes place where it is weakest in tensile stress—that is, where it is divided partly or wholly by steel joists. Silicate of soda has been used to advantage for hardening concrete where the latter can be immersed in a bath containing five to ten per cent. of the silicate, but it does not appear to be of any advantage when added to the water used for mixing, and is therefore of little use for plastic floors. If the latter are washed with the solution when the material has set, this hastens the hardening, and allows the floors to be used somewhat sooner than otherwise.

The Choice of Aggregates.

Granite fragments are more used than any other aggregate for plastic floors. Granite was the first material to be generally used for this purpose, and answers extremely well. Occasionally it may become slippery, but this is most often occasioned by damp and dirt, as with public footpaths. Kentish rag is advocated as an aggregate by reason of being of a less slippery nature, and is used to some extent for stairs and steps, and in a general way wears equal to granite. Portland stone dries a better colour than granite or rag, but does not wear well. Corundum, the hardest material next to a diamond, is said to be non-slippery, and should withstand any amount of wear; but it is expensive. Slag from iron ore was used considerably at one time both for concrete and floor surfaces, but as it wore it was sometimes found to become more or less slippery. This drawback, however, depends a good deal on the nature of the material, some being of a glassy character. A more common objection to slag is that it contains more or less sulphur, which can only be got rid of by aeration, and may cause disintegration. This fault, however, has never come within the writer's experience. There are enormous mounds of this material, which have accumulated for years wherever there are iron mines; and as machinery has been adopted to reduce it to a con-

sistency for concrete and for surface finishing of concrete floors, there is a probability of its being used extensively in the future. But there is a great deal of difference in the suitability of slag produced by different processes in different parts of the country, and in the relative amount of sulphur contained. The general rule appears to be that for concrete purposes the amount should not exceed 0.7. Acid-process slags appear to be suitable, and basic slags unsuitable for purposes in which cement is a principal ingredient. Siliceous or flinty sand should never be added to any kind of aggregate for floor surfaces: the friction caused by walking on the latter causes abrasion and generates dust. It is a mistake to assume that because sharp flinty sand mixed with lime makes an excellent mortar, it is therefore the best material to mix with cement. The smallest particles of the aggregate should not be less than the size of a pin's head, assuming that the cement is sufficient in quantity to form a dense or homogeneous mass. Mica has come into use for pressing or embedding in cement surfaces. Its sparkling appearance is sometimes admired as a relief from the dullness common to plastic floor surfaces generally. But whatever is used as an aggregate, it is necessary that it should wear equally with the cement. A negative illustration of this proposition may be seen where soft brick steps are cemented together. The bricks wear away and the cement stands up in ridges. Again, where beach gravel or shingle is used, the cement wears, but the shingle remains; the result being rough, unpleasant walking.

The use of too much sandy element in the aggregate goes to form a cement mortar which affords less resistance to footwear than neat cement.

To obviate the hard and cold surface of floors of the kind described, sawdust, sand, and cement have been tried, but apparently with no great success; and cork paving, consisting of cement and granulated cork, has been used for some time past, principally where freedom from noise is required, but at a higher cost. Floor surfaces, in which magnesia in combination with other chemicals—a German invention—has been extensively adopted for some years past, and if properly executed is very durable. It can be done in various colours, and is easily polished. Being jointless and impermeable, it is much used in hospitals and similar buildings.

It is very necessary that the concrete on which it is laid should be quite dry, and that only Portland cement should be used as a matrix, lime being unsuitable.

Tiles, Mosaic, and Terrazza.

Tile or mosaic surfaces, terrazza, etc., are readily applied to concrete floors, but often develop cracks, probably from the same causes that affect plastic floors, and the same remedies apply—that is, performing the work in sections, or, in the case of terrazza, by the use of borders, dividing it into bays or panels. If cracks occur through expansion or contraction of the concrete beneath, there is practically no remedy. The objection to plastic floor finishing where stone or slag fragments form the aggregate, that it is cold, rendering it unsuitable for living-rooms, does not necessarily hold good with regard to sculleries, pantries, laundries, and similar places; for which, indeed, it is admirably adapted, being jointless and non-absorb-

ent, easily cleaned, and vermin-proof—points much in its favour. For warehouses and a certain class of factories and workshops it is also adapted, but not where workmen stand alongside a bench or at a vice or machine most of their time. The men complain that the floor "draws their feet," the cold surface drawing the heat therefrom and causing footache, exactly as a paved stone floor would.

Where workmen are constantly on the move, or wear heavy boots, the objection is not so apparent. Another objection to plastic floors of this description is what is called "dusting." Fine impalpable dust often occurs where the aggregate has not been thoroughly washed, or where fine sharp sand has been added, which in the friction caused by traffic cuts the material and induces abrasion. This impalpable dust is most injurious to machine bearings, more especially the delicate machines used by bookbinders, watchmakers, and others. For all such places a wood surface is to be preferred.

An excellent covering for concrete floors is linoleum, not the cheapest, about one-eighth of an inch thick, but the more substantial kind, not less than a quarter of an inch thick, and costing 2s. per superficial yard, or thereabouts.

The concrete should be screeded quite true and straight, and finished with a steel trowel to obtain a smooth surface, otherwise the solution for fixing the linoleum will not adhere. No greater thickness of cement and sand than is necessary for straightening the concrete is required. The important point is that the finished surface and the concrete are substantially dry, not merely on the surface, but throughout. If otherwise the linoleum will soon become rotten. To make sure upon this point, lay a small piece, or several pieces, of waterproof paper close to the surface for a day and night, when, if the floor is not dry, beads of water will be found on the underside. Linoleum should be fastened down at the edges and seams with the solution supplied by manufacturers for the purpose, and by workmen accustomed to the job. Linoleum shrinks if not well seasoned, and although the material may have been in stock for some considerable time, seasoning is not assured unless the rolls are opened out and the material is laid on a dry wood floor with the face side downwards for as long as circumstances permit, and, of course, in dry weather. Seasoning has much to do with its durability. I have known it to last sound, where there has been considerable wear, for more than twenty years.

On a dry cement surface, it lasts longer than on a wood floor. Cork carpet is linoleum that has not been subjected to so much pressure in the manufacture, and as a result is softer and pleasanter to walk on.

Wood in some form or other is in general use for finished surfaces of concrete floors. Wood blocks, ordinary flooring, parquetry, etc., being readily applied. Concrete floors require in their construction a large amount of water, and until this has almost entirely evaporated there is danger from expansion of the wood casing, or wood to which it is fixed acquiring dry rot and infecting the casing. Wood should never be entirely embedded in concrete, nor even partly so, unless it is exposed to a current of air, or dry rot will probably result. For this reason levelling-stumps for con-

crete on ground floors should be carefully removed and wood fillets or small joists should never be embedded in the concrete for fixing floor boards thereto.

Probably if concrete floors have been executed and protected from rainfall, and the utmost facilities afforded for drying—two or three months in summer, but longer in winter—there is not very much danger to be apprehended to the wood surface, assuming that the concrete is only of moderate thickness. The thin floated surface of the concrete should be given a week or two, or longer, to become dry before wood is fixed thereto. Where concrete is used as a base for wood surfaces on ground floors, it should be deposited on a substantial layer of dry rubble, and not on the natural soil, from which water or damp may rise. Open windows and March winds facilitate drying better and quicker than artificial heating. The surface of the concrete dries quickly under these conditions, but the appearance of dryness is rather misleading. As a matter of fact, it is impossible to seal hermetically the water in a concrete floor; it must find its way out somewhere; and if we consider the quantity required in floor construction and the slow process by which it disperses, we can understand why concrete is so long before it becomes perfectly dry.

Wood blocks are often affected by moisture in the concrete so that they rise from their beds, and, expanding, become loose, or may thrust out brick partition walls. Ordinary floor boards under similar conditions will act in the same way, or rise or turn up and form slight ridges where they join each other, although there may be some space between the boards and the concrete.

The usual way of forming a boarded surface to concrete floors is either to nail the boards to strips or fillets of wood which are nailed to the concrete floated surface, or direct thereto. In either case the floated surface must obviously be formed quite straight and true. The concrete aggregate should be coke breeze, cinders, soft brick debris, or anything of a suitable character that will enable nails to be driven therein. The proportions are 1 part of cement to 5 parts of the aggregate, floated surface, 1 part of cement to 3 or 4 parts of coarse sand, preferably coke-breeze, ashes, or brick debris screenings. Floating the surface of the concrete within a week or two of the time when the boards are to be laid may be advisable, so as not to seal the concrete with a more impermeable material (which, being of small amount, dries more rapidly) longer than necessary.

The use of wood fillets provides a space between the boards and the concrete for electric-light tubes, etc., if required; but *per contra* the hollow space becomes the receptacle for dust and dirty water from floor washings oozing through the joints of the floor-boards. To prevent the fillets should be grooved and tongued.

The floor boards should not exceed four to five inches in width. Unless the boards are secret-nailed, the many nail holes will give an unsightly appear-

ance, which, however, may be partly remedied by adopting the section shown. Water from floor-washings evaporates more rapidly from a joint of this description than when concealed in an ordinary matched or tongue-and-groove joint.

Nailing the floor-boards, square-edged, to the floated surface of the concrete (provided time has been allowed for the concrete to become dry) is, in the writer's experience, the better system of the two, as there are then no cavities in which dust and dirt may accumulate. The objection is that the boards are nearer the danger zone of water in the concrete. If means permit it is a good plan to paint the under side of the boards with red-lead paint, or a coat of bitumastic, the smell from which soon evaporates; or the entire area of the floors may be covered with cheap impermeable paper, lapping the joints. Sir Henry Tanner said, in a discussion at a meeting of the Concrete Institute, that, for the new post offices, he had tried nailing the boards direct to the concrete with no great measure of success.

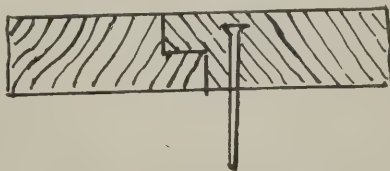
The best floors, in the writer's experience, had been laid about twelve years since in a new mansion. Some were oak, secret-nailed, others North Carolina pine, square-edged, both nailed direct on the concrete, and both as perfect as at the time they were laid. The reason was obvious; the concrete had a year to allow the water contained therein to evaporate.

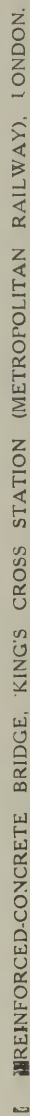
The surest way to set up dry rot is to cover the new wood surface of concrete floors with linoleum. It may be some time before it takes place, but it is almost sure to happen sooner or later. If the concrete is thoroughly dry, it is just possible that dry rot may not occur; but not one concrete floor in twenty is in this condition at the time it is laid.

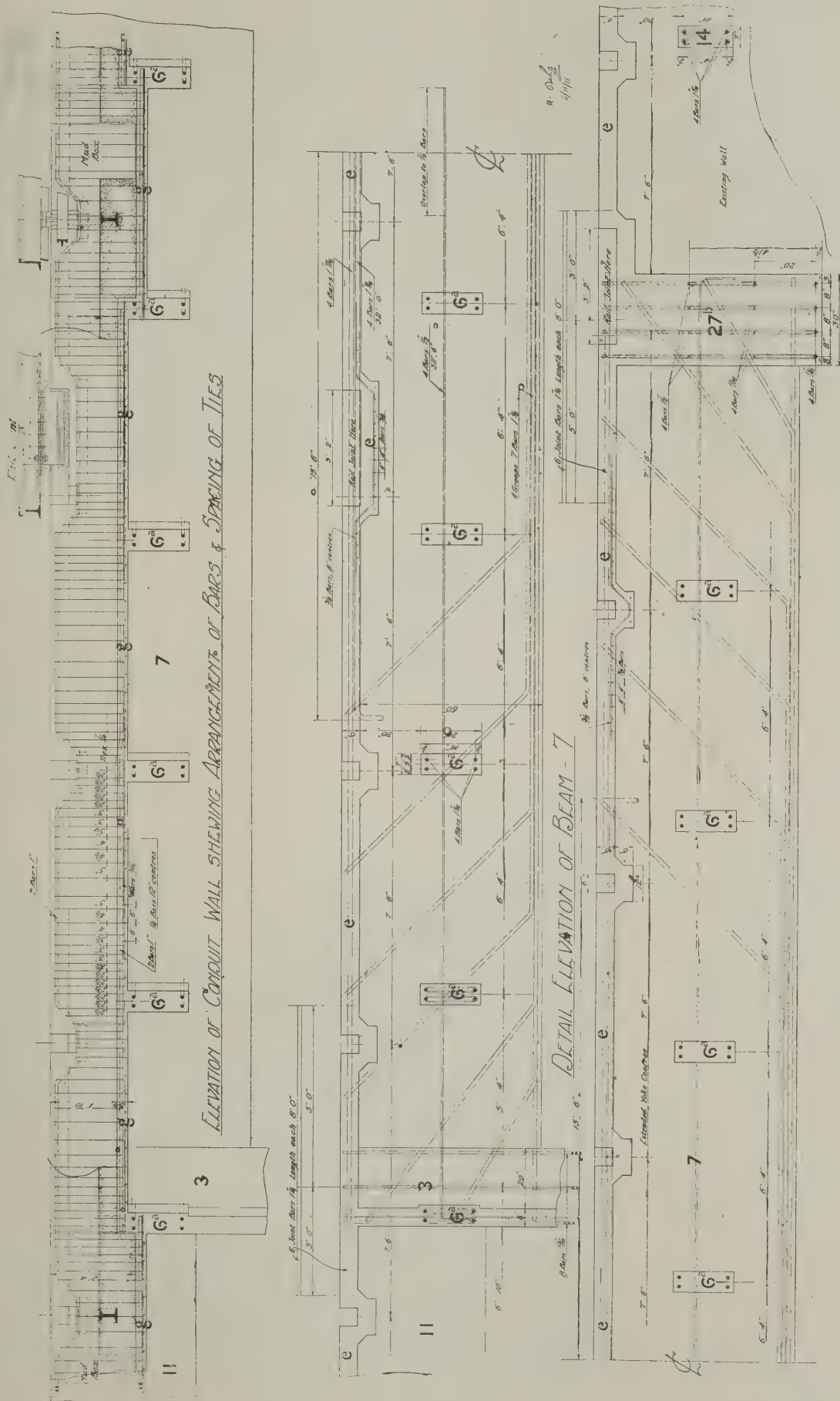
For workshops, factories, and other places where workmen are employed, maple flooring, which is harder and wears longer than deal, is the best surface material. The cost of labour in laying any kind of wood flooring direct on concrete is about double that of laying it in the ordinary way on wood joists.

Parquetry may be laid on concrete floors by gluing it to the concrete; but as the glue has to be used hot, it requires some considerable practice to do it successfully. The material used by the German specialist Eberhard was 50 lb. of glue, 20 lb. of resin, 2 lb. of boiled linseed oil, and 2 lb. of dry red-lead. It was used as hot as possible, poured on the concrete, and the blocks bedded on it. For plain work, about a superficial yard or less was done at a time, the glue chilling very rapidly. It answered very well for borders of a suite of superior bedrooms with thick linoleum laid between and carpeted in the ordinary way.

No matter what form of finished surface is adopted, the important point is that the concrete base should be sound, and in its construction means should be taken to prevent subsequent contraction or expansion. To this end it should be, if possible, executed in sections of limited area, giving time for each portion to shrink somewhat in setting, or in embedding therein tension rods, expanded metal, or wire netting, which serve to distribute the tensile stress over the entire area of the floor. Where wood is employed, the concrete and floated surface should be as dry as circumstances permit, and facility given to hasten that condition by means of open windows and doors, or artificial heat.







REINFORCED-CONCRETE BRIDGE, KING'S CROSS STATION (METROPOLITAN RAILWAY), LONDON.



REINFORCED-CONCRETE BRIDGE AT KING'S CROSS STATION (METROPOLITAN RAILWAY) IN COURSE OF CONSTRUCTION.

REINFORCED-CONCRETE BRIDGE AT KING'S CROSS STATION.

The Metropolitan Railway are at present carrying out extensive alterations and improvements at many of their stations, and in these works reinforced concrete is being extensively used.

The accompanying illustrations show the new bridge which is rapidly nearing completion at King's Cross Station. The object of this new bridge is to connect Gray's Inn Road to Pentonville Road, through the site of the old booking-office. The whole of this work is being carried out under the superintendence of Mr. W. Willox, M.Inst.C.E., engineer of the Metropolitan Railway Company.

The bridge, which is built in reinforced concrete on the Coignet system, is claimed to be the largest road bridge of this description in London. The various dimensions of the works are as follows:—There are two spans composed of straight beams, the bridge being slightly on the skew. The main span is 52 ft., and the smaller span 32 ft., giving a total length, taking into account the short end spans, of 130 ft. The width of the bridge, including the footpaths, is 60 ft.

One of the main features of this work is that it had to be constructed without interfering with the traffic of the railway below; and in order to support the wooden centering and moulds for the reinforced concrete work over the permanent ways, it was found advisable to utilise old steel trellis-work girders, which had previously been in use to support the floor of the booking-hall of the old station.

The roadway, which has been calculated for a uniformly distributed load of two cwt. per sq. ft., and also for two moving point loads of eight tons, situated at 6 ft. centres, has been designed in such a manner as to accommodate two lines of double-deck electric tramways of the usual London County Council type. Accommodation has been provided between the reinforced concrete beams for the special cast-iron yokes and ducts for

the supporting of the rails and the transmission of the electric power.

The details of the reinforcement are in accordance with the Coignet system for the construction of straight beams. The main bars vary in diameter between $\frac{1}{2}$ in. and $1\frac{1}{4}$ in., and are of mild steel with a round section. The tension and compression reinforcing bars are connected together by means of stirrups, also made with round bars of small diameter. These vertical stirrups are ar-

ranged in such a manner as to take up the shearing stresses, and also in order to form a mechanical connection between the main reinforcement of the beams.

The slabs are composed of bars varying between $\frac{3}{8}$ in. and $\frac{5}{8}$ in. in diameter and arranged to form a meshwork. It is anticipated that this important bridge will be open to traffic early in the summer. We understand that the design of this bridge was obtained by Messrs. Edmond Coignet, Ltd., of 20,



REINFORCED-CONCRETE BRIDGE, KING'S CROSS, LONDON: VIEW SHOWING CONDUITS FOR TRAMWAYS.

Victoria Street, S.W., in open competition. The work has been carried out by Messrs. W. King and Son, contractors, of London, licensees of the Coignet system. [We are desirous to state that the name of another firm of contractors (p. 401 of last week's issue) was given in error.]

With respect to the article on the Metropolitan Railway's new offices published in our last issue we have to point out that the descriptive notes beneath the illustration on page 403 do not refer to the building in Marylebone Road, but to the elevation of the new offices reproduced on the preceding page. The building shown on page 403 is not to be constructed entirely in reinforced concrete; Messrs. Drew-Bear, Perks and Co., Ltd., inform us that they have been entrusted with the steelwork contract of this building up to the first floor level.

THE TRUE BENDING MOMENTS OF BEAMS WITH VARIOUS DEGREES OF FIXITY.*

BY MAURICE BEHAR, CIVIL ENGINEER (ECOLE DES PONTS ET CHAUSSÉES).

The object of this paper was to discuss certain principles and formulæ for reinforced concrete work which have been the subject of controversy, and also to show, by means of examples, the excessive increase in the weight of the steel bars in beams and posts in reinforced concrete, due to the application of these methods.

As to beams, the author said, almost all the engineers specialising in reinforced concrete calculate these elements by applying the usual laws of mechanics, or, in other words, the laws governing the strength of materials. Nevertheless, for the main beams and secondary beams fixed at their extremities to other members in reinforced concrete, such as walls, posts, or other beams, the specialist engineers usually admit that a certain amount of fixity takes place at these points of junction, and concerning this it is usual to make certain assumptions.

*Extracts from a paper read before the Concrete Institute on April 16th.

Some engineers consider that the fixation is partial on the support, and has for its value $\frac{WL}{24}$. In this case they calculate their moment at the middle of the beam, sufficiently strong to resist a bending moment of $\frac{WL}{12}$, which is the corresponding moment to the one stated above.

Other engineers, and we think they are in the majority, consider that the bending moment should be $\frac{WL}{10}$ in the middle of the beam, and in this case they provide at the points of support a section of steel capable of resisting a corresponding moment of $\frac{WL}{40}$.

Again, other specialists consider that reinforced concrete beams extending over several spans must be considered as continuous, and they apply to the calculation of these beams the usual rules governing continuity.

In addition to the three above-mentioned methods of calculating a beam in reinforced concrete fixed upon its two points of support, it is now my intention to consider the method which has been put forward for official sanction, and which would have the effect of stipulating a bending moment of $\frac{WL}{12}$ in the middle of the beam and $-\frac{WL}{12}$ at the points of support.

Of these four methods of calculation, let us consider the question of which one produces the maximum of safety in the construction.

(1) Let us assume that the bending moment in the middle is $\frac{WL}{12}$, and

that the corresponding moment at the points of support is $\frac{WL}{24}$. It may happen that on account of the continuity of two consecutive beams and the distribution of the loads on the spans, that the moment at the point of support becomes greater than the one provided for. In this case fissures will occur at this point.

Let us now assume by exaggeration that these fissures render the points of support absolutely free. The middle of the beam will then support a bending moment equal to $\frac{WL}{8}$, but as the beam has been calculated for a bending moment in the middle of $\frac{WL}{12}$, the factor of safety will become—

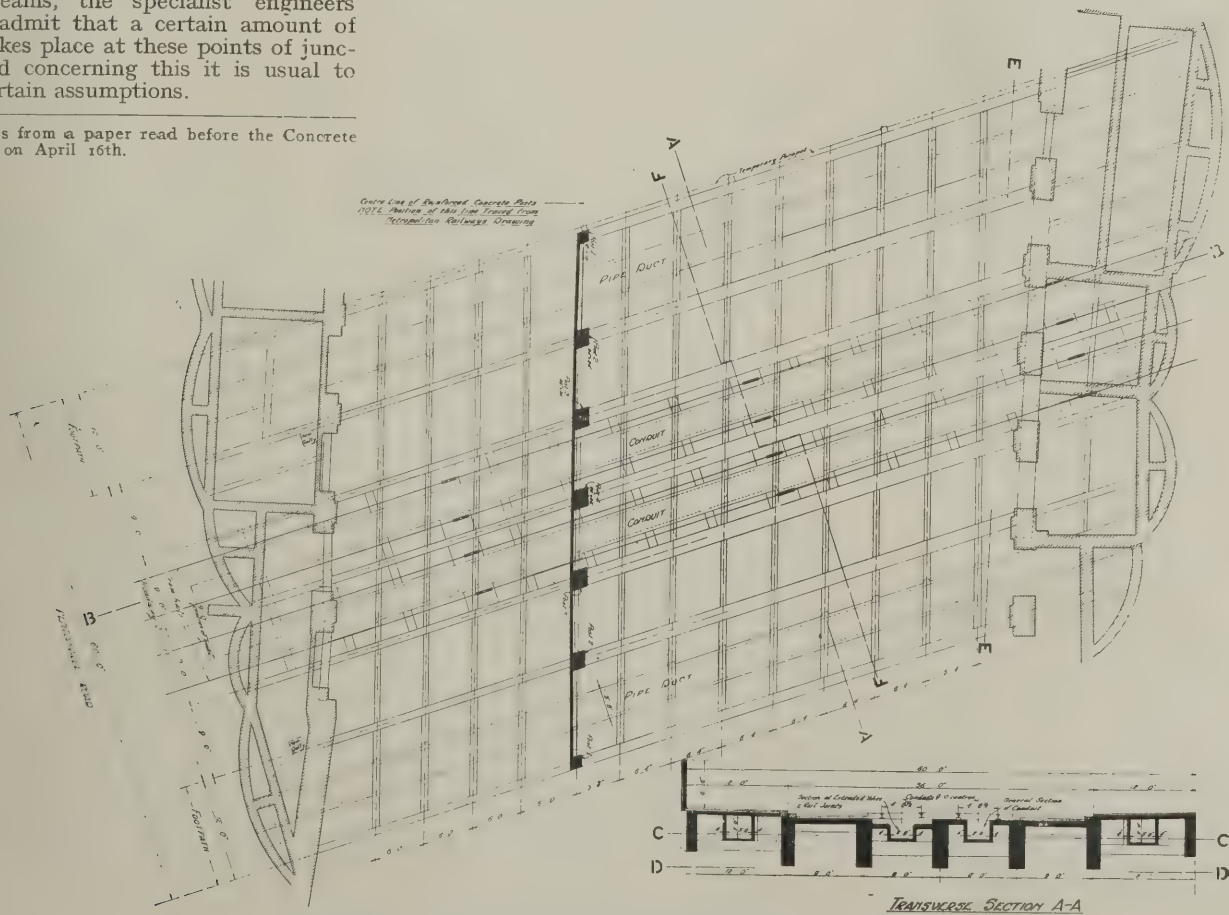
$4 \times \frac{8}{12} = 2.666$ instead of 4.

The beam will not collapse on this account, inasmuch as the concrete in the lower part of the beam situated underneath the neutral axis is working in extension, which has not been taken into account in the calculations.

(2) Let us now assume that the bending moment in the middle is $\frac{WL}{10}$ and the corresponding moment at the supports is equal to $\frac{WL}{40}$. The method of reasoning is the same as for the above, except that in the case of the transformation of the point of support into a free support the factor of safety becomes

$4 \times \frac{8}{10} = 3.2$ instead of 4.

(3) Let us now consider the continuous beams. In this case the moments at the supports are generally greater than $\frac{WL}{12}$.



REINFORCED-CONCRETE BRIDGE, KING'S CROSS, LONDON.

Concerning the moments in the middle of the spans, they will often be much less than $\frac{WL}{12}$. We must remember, however, that although in structural steelwork it is possible to obtain perfect continuity between two consecutive spans, it is not so with reinforced concrete, where the continuity depends upon the adherence of the concrete to the bars provided in the upper portion of the beam at the points of support.

I am of opinion that the method of constructing consecutive beams in reinforced concrete does not ensure such perfect continuity as that which may be obtained in consecutive metallic girders. If owing to this lack of solidarity between two consecutive spans, or if owing to bad construction the point of support should give way and become transformed into a free support, then the middle of the beam, which may in certain cases have been calculated with a moment less than $\frac{WL}{12}$, will have a factor of safety less than 2.66, and in certain cases even less than 2. It is obvious that the construction in this case becomes endangered, and the danger is all the greater because if one of the beams gives way the others will give way in turn, on account of the fact that the continuity upon which we relied will have disappeared owing to the failure of the first element.

It is for this reason that in steel construction, when there are several continuous spans, it is usual to divide these into a series of portions of three or four consecutive continuous spans, each portion being separated by free supports.

(4) If we consider $\frac{WL}{12}$ in the middle and $-\frac{WL}{12}$ at the points of support, this case certainly has the effect of producing a greater safety than those above mentioned. In the middle there is the same drawback as in the first case, but not the one due to continuity. At the supports, however, this case is weaker than the case of continuity, although it has very nearly the same value. On the other hand, the latter method obliges the engineer to provide, as in the case of continuity, in the bottom compressed portion of the beam, and at the points of support, a considerable section of steel, and this section will be all the greater at these two points, on account of the fact that, if this principle is admitted in the Official Regulations, the section of steel required will have to be calculated by applying a stress in the steel equal to fifteen times the stress of the concrete, taken at the axis of the reinforcement employed.

Now, as a matter of fact, a large number of examples of principal beams and secondary beams which I have calculated with $\frac{WL}{12}$ at the supports have proved to me that the working stress of the steel in compression is always below 8,000 lb. per sq. in., and that in secondary beams this stress rarely attains 6,000 lb. per sq. in. The result is that one is often obliged to provide such a considerable number of steel bars, that it is materially impossible to place them in the small compressed area of the concrete, in the bottom of the beam.

A close examination of the four methods of calculation mentioned above has led me to conclude that as far as stability is concerned, the moment of $\frac{WL}{12}$ in the middle and at the supports gives a greater security. $-\frac{WL}{24}$ or $-\frac{WL}{40}$ at the supports

and their corresponding values of $\frac{WL}{12}$ or $\frac{WL}{10}$ in the middle would never actually cause the collapse of a beam. The most that could happen in such a case would be, that the floor slab over the beams would show fissures, whereas, if we consider the case of continuity, we find that this may prove dangerous if the workmanship is bad or the materials are unsuitable.

From an economical point of view, the semi-fixation with moments of $-\frac{WL}{24}$ at the support and $\frac{WL}{12}$ at the middle, requires about the same amount of steel as the partial fixation with moments of $-\frac{WL}{40}$ at the supports and $\frac{WL}{10}$ at the middle.

Concerning $-\frac{WL}{12}$ at the supports and $\frac{WL}{12}$ in the middle, when it is possible to actually construct the beam by accommodating the amount of steel required, I have found that these values bring about an increase 40 to 50 per cent. greater than required in the case of semi or partial fixation mentioned above, and that in certain cases the excess of steel may be as much as 100 per cent.

Concerning the case of continuity, if we are obliged to provide in the lower portion of the beams the necessary section of steel to take up the compression at the points of support, and if we put aside the method which consists of reinforcing this portion by means of spirals, the weight of the bars would be less than that due to $-\frac{WL}{12}$ at the supports and in the middle, but the weight of steel would be superior to that produced by the formula of semi or partial fixation.

I understand that for various reasons the method of reinforcing the concrete in the beams by means of spirals would not be considered or authorised in the new Regulations, and it is doubtful whether this particular method could meet the difficulty in an economical manner. If, however, the new Regulations were to allow the use of spirals, to increase the compression of beams, and if it was found that this was the only possible way of solving the difficulty of the compression, then it is obvious that the Regulations would have the effect of favouring, to the exclusion of all others, one particular method only for which a patent has been obtained, thereby creating a monopoly.

It is therefore absolutely necessary that the proposed Official Regulations should not have the effect of obliging engineers to calculate beams fixed at both extremities with a bending moment of $-\frac{WL}{12}$ at the supports and $\frac{WL}{12}$ at the middle, and I sincerely trust that the authorities who are at present drafting out new Regulations will simply stipulate the application of the usual laws of mechanics for the determination of the dimensions of beams in reinforced concrete; and also hope that the case of semi-fixed beams, which is in no way empirical, and which is absolutely in conformity with the laws of mechanics, shall be considered and shall find its proper place in the new rules.

M. Behar then proceeded to deal with compression in the upper portion of the beams and in the middle of the span; lintels or beams without slabs; and posts or pillars in reinforced concrete. Special

attention was given also to the question of ascertaining the position of the neutral axis in various cases. The paper was mostly of a mathematical character, and had for its principal object the eliciting of views of all those concerned in the design of reinforced concrete in a discussion upon all the subjects dealt with in the paper.

In the discussion which followed, the following gentlemen took part:—Professor Henry Adams, M.Inst.C.E., M.C.I., R. W. Vawdrey, B.A., Assoc.M.Inst.C.E., M.C.I., Ewart S. Andrews, B.Sc. (Eng.), M.C.I., Morgan E. Yeatman, M.A., M.Am.Sec.C.E., M.C.I., D. Weoster Robertson, M.C.I., Herbert E. Steinberg, Assoc.M.Inst.C.E., M.C.I., E. Fiander Etchells, F.Phys.Soc., M.Math.A., A.M.I.Mech.E., M.C.I., Sir Henry Tanner, C.B., I.S.O., F.R.I.B.A., Pres.C.I.

A REINFORCED-CONCRETE LIGHTHOUSE.

A reinforced-concrete lighthouse on a concrete crib foundation has been recently completed at Huntington Bay, N.Y. It is of the ordinary pilaster construction, with intermediate wall slabs, and is covered with a flat roof, around which is placed a concrete parapet wall. The light tower, although an integral part of the building, is built monolithically, and has a square exterior measuring 10 ft. on a side, with a circular interior 8 ft. 4 in. in diameter. Considerable attention was paid to the surfacing of the concrete. The pilasters were washed and polished, and in the slabs between them the aggregate was exposed first by a pneumatic tool, then by a bush hammer, and subsequently washed with muriatic acid. A 1:2:4 concrete mixture was used on the work. No provision was made for waterproofing the walls at the time the concrete was put in, but as they were found to be pervious to the driving rains and the spray of severe storms they were treated with a waterproofing compound.

DESCARTES ON TOWN PLANNING.

There is seldom so much perfection in works composed of many separate parts, upon which different hands had been employed, as in those completed by a single master. Thus it is observable that the buildings which a single architect has planned and executed are generally more elegant and commodious than those which several have attempted to improve, by making old walls serve for purposes for which they were not originally built. Thus also, those ancient cities which, from being at first only villages, have become, in course of time, large towns, are usually but ill laid out compared with the regularly constructed towns which a professional architect has freely planned on an open plain; so that although the several buildings of the former may often equal or surpass in beauty those of the latter, yet when one observes their indiscriminate juxtaposition, there a large one and here a small, and the consequent crookedness and irregularity of the streets, one is disposed to allege that chance rather than any human will guided by reason must have led to such an arrangement. And if we consider that nevertheless there have been at all times certain officers whose duty it was to see that private buildings contributed to public ornament, the difficulty of reaching high perfection with but the materials of others to operate on will be readily acknowledged.—*Rene Descartes: "Discourse on Method"* (1637).

REINFORCED-CONCRETE CHIMNEY STACKS.

A reinforced-concrete chimney stack, recently erected near Drury Lane, London, W.C., by Messrs. G. Trollope and Sons and Colls and Sons, Ltd., is 144 ft. 9 in. high; and as the volume of gases to be carried up is comparatively small, an inside diameter of 2 ft. 6 in. was considered to be sufficient. Mr. Oscar Faber, B.Sc., A.M.I.C.E., the chief engineer to the contractors, believes that it will be of interest here to explain the considerations which led to the erection of the chimney in reinforced concrete, since, though the advantages of this material are frequently lauded in a general way, the particular chimney under consideration could hardly have been built in any other material. The chimney, if built of brick, would have to comply with the London Building Act of 1894, Section 65, which enacts, *inter alia*—

(1) Every shaft shall . . . taper gradually from the base to the top of the shaft at the rate of at least $2\frac{1}{2}$ in. in 10 ft. of height.

(2) The thickness of brickwork at the

top of the shaft . . . shall be at least $8\frac{1}{2}$ in., and shall be increased at least one half-brick for every 20 ft. measured downwards.

(6) The width of the base of the shaft . . . shall be at least . . . if the same is round . . . one-twelfth of the height.

(7) Any fire-bricks built inside the lower portion of the shaft shall be provided as additional to, and independent of, the thickness of brickwork prescribed by those rules, and shall not be bonded therewith.

It will be seen from these that the minimum dimensions permissible for the brick-shaft would be:—

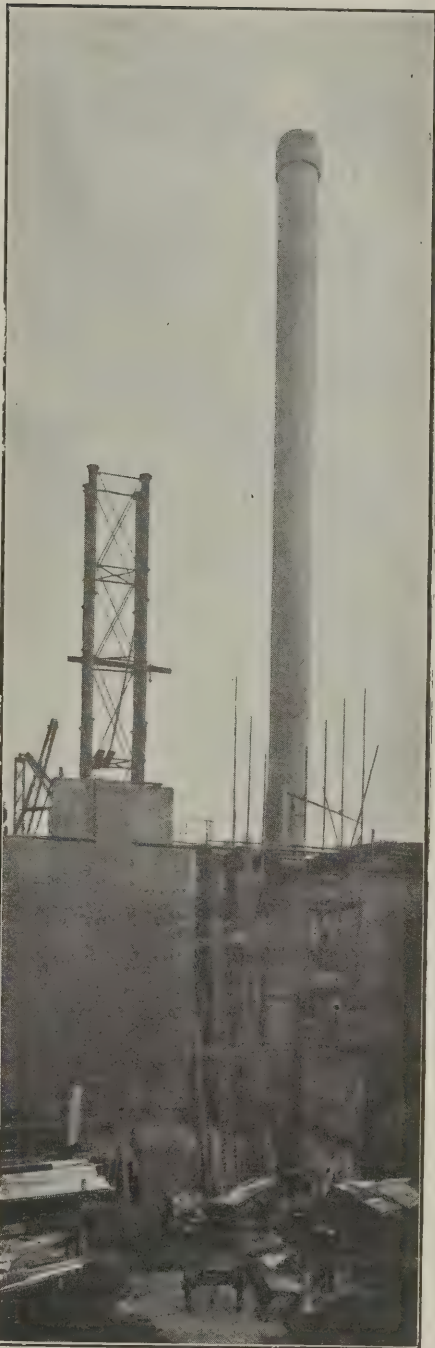
Outside diameter at top	..	4 ft.
base	..	12 ft.
Wall thickness at top	..	9 in.
base	..	3 ft.

Allowing a wind pressure of 25 lb. per sq. ft. on the projected area of the chimney (this pressure being assumed to include the reduction factor for circular cross-section), it will be found that the overturning moment

$$M = 1,748,000 \text{ ft.-lbs.},$$

and the weight

$$W = 638,000 \text{ lb.}$$



The Completed Chimney.

Whence

$$\text{the eccentricity } e = 2.74 \text{ ft.}$$

If the brickwork were capable of resisting tension, the maximum compressive stress would be

$$C = \frac{638,000}{84.75} + \frac{1,748,000}{158.8} \\ = 7530 + 11,000 = 18,530 \text{ lb./ft.}^2, \\ \text{or } 128 \text{ lb./in.}^2.$$

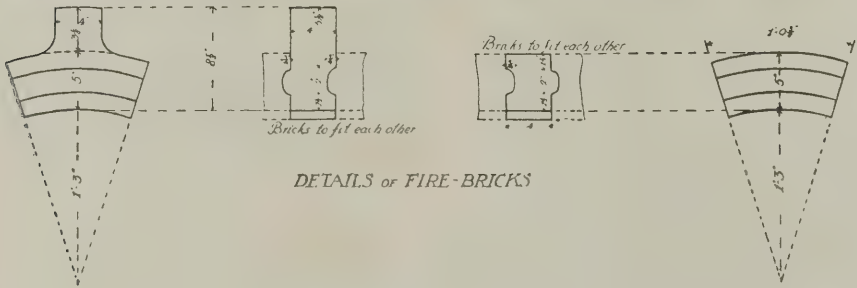
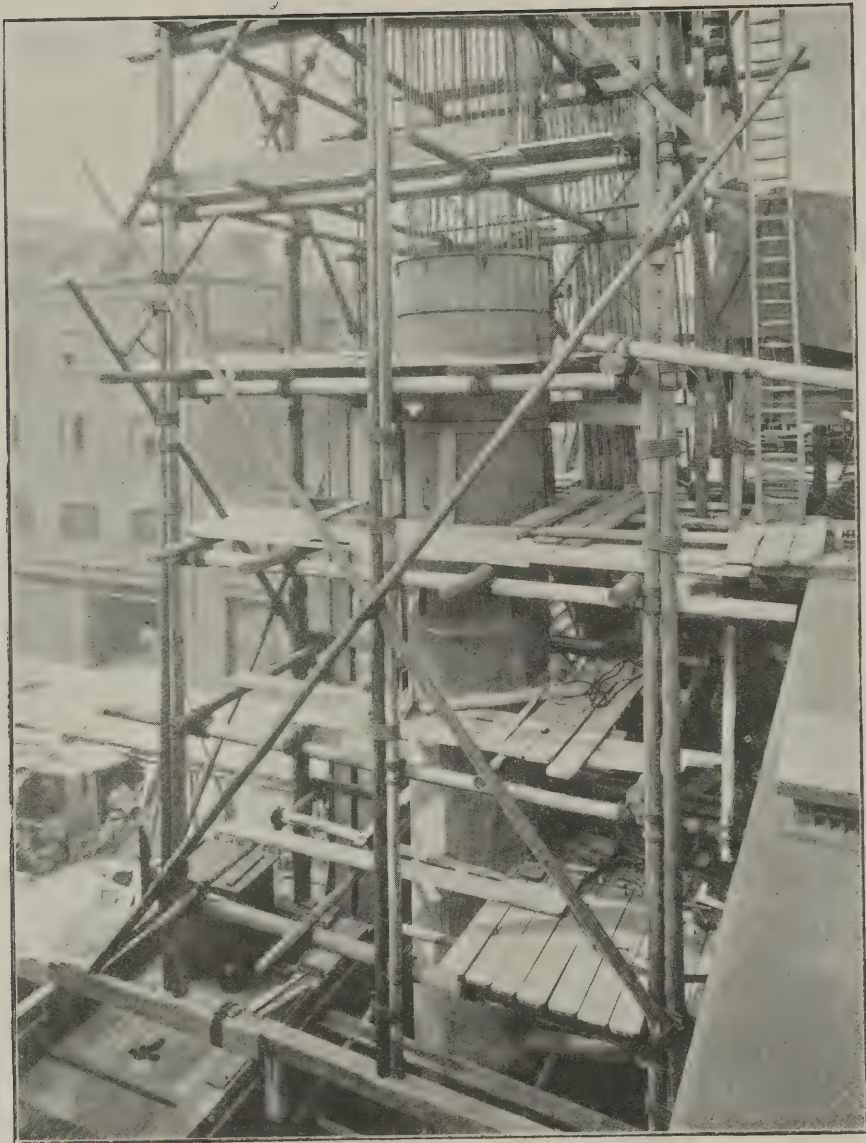
This figure would only be justified if the brickwork were capable of resisting a tensile stress of 3470 lb./ft.^2 or 24.1 lb./in.^2 .

The exact calculation of the maximum pressure when the tensile strength is ignored is not a simple matter, although it may be determined in the same manner as that advocated for reinforced-concrete chimneys in the article by Messrs. Taylor, Glenday, and the writer, which appeared in "Engineering," March 13th, 1908. (An illustrated article on the chimney now under notice was given in the issue of our contemporary for December 22nd, 1911.) It is obvious, however, that it would exceed $128 \text{ lb. per sq. in.}$, whereas



View in Course of Erection.

REINFORCED-CONCRETE CHIMNEY STACK, DRURY LANE, LONDON.



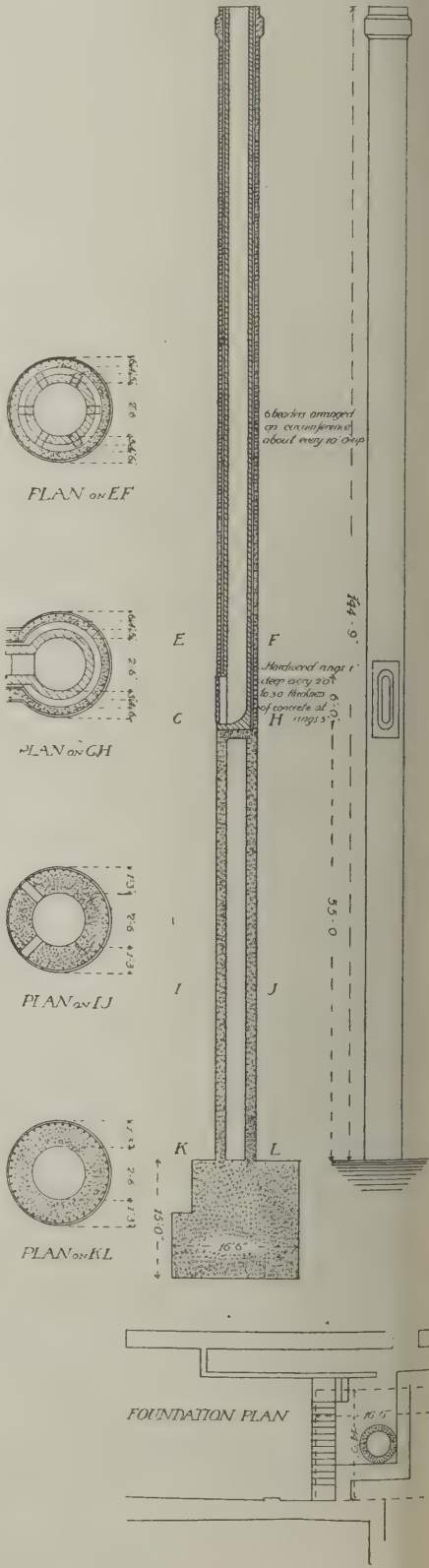
DETAILS OF FIRE-BRICKS

REINFORCED-CONCRETE CHIMNEY, DRURY LANE, LONDON.

125 lb. per sq. in. is the limiting stress allowed by the London County Council for hard brick in cement mortar. It will be seen, therefore, that an outside diameter of 12 ft. is not only the least permissible by the London Building Act, but is also the least which a prudent engineer would care to erect. This size of chimney, though small in comparison to its height, is, however, considerably greater than could be erected at Short's Gardens, owing to great scarcity of room. The alternatives were therefore reduced to a self-supporting chimney of steel or reinforced concrete. The first of these could not be passed as a permanent structure by the London County Council, owing to the corrosion of the steelwork, and only a reinforced-concrete

chimney would meet the case. When it is shown that the diameter at the base was kept down to 5 ft., it will be seen how effective was the substitution of reinforced concrete for brick. The lower portion of the chimney, up to flue entrance, is 1 ft. 3 in. thick, and above that 6 in. thick. Above the flue entrance a lining of firebrick 5 in. thick is provided, with an air-space 4 in. thick between it and the outside shell. Vent-holes are left near the flue entrance, through which a current of air is induced in the air-space between the liner and the outer shell. Experience with several chimneys of this type has shown that the concrete shell is liable to crack badly under the heat of the chimney, and this fact has no

doubt hindered to no small degree the employment of reinforced concrete for this purpose. Some theoretical calculations of temperature stresses led Mr. Faber to a system of construction in which timber rings are embedded at intervals on the inside face of the concrete shell, which practically reduces to zero the stresses due to expansion. This system of construction, which is patented by Mr. Faber, was adopted by the Associated Portland Cement Manufacturers in a chimney built by them at their works at Burham, on the Medway. This chimney has now been in use several months, and is quite free from any cracks due to temperature stresses.



THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY

MAY 1st, 1912.

Volume XXXV,

No. 902.



NEWCASTLE HOUSE, LINCOLN'S INN FIELDS, LONDON: DETAIL OF ENTRANCE.



COLOSSAL STATUE OF RAMESES THE GREAT. DRAWN BY A. C. CONRADE.

THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 1st, 1912, []

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 902

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The History of Lincoln's Inn Fields.

THE third volume of the "Survey of London" has just been issued, under rather peculiar circumstances. It was in January, 1906, that the London County Council directed the General Purposes Committee to report what course the Council should adopt in case of the contemplated destruction of any building of architectural or historical interest. Ultimately it was resolved that the Committee for the Survey of the Memorials of Greater London, having already made a register of buildings in the East End of London, should be requested to continue its work, and that the Council should print portions of the Register from time to time; and accordingly the Survey furnished the materials for Volume I. of the Register, dealing with the Parish of Bromley-by-Bow. An agreement was come to with the Survey Committee by which the Council bore the expense of printing, leaving the actual documents in the hands of the Survey Committee and supplying them with 500 copies of the volume for their members. This arrangement being considered unsatisfactory (we are not notified why), the Survey Committee published Volume II. (Parish of Chelsea) at its own cost. But a large amount of material having been collected, the Council, "having regard to the rapidly changing character of London," desired the work to be continued without further delay, and eventually entered into an agreement for five years with the Survey Committee, providing that the materials collected should be published from time to time in the joint names of the Council and the Survey Committee, the Council retaining financial control, bearing the cost of production, and taking the proceeds of sale, and presenting the Survey Committee with copies for its subscribers. Briefly, the Survey Committee does the work and the County Council takes the risks. The outcome of this arrangement is Volume II. of the "Survey of London," the title standing thus:—
"Survey of London: issued by the joint publishing committee representing the London County Council and the Committee for the Survey of the Memorials of Greater London. Under the general editorship of Sir Laurence Gomme (for the Council) and Philip Norman (for the Survey Committee), Vol. II. The Parish of St. Giles-in-the Fields (Part I.), Lincoln's Inn Fields."

It was rightly judged that so much historical and architectural interest attached to Lincoln's Inn Fields that it merited a volume to itself, the remainder of the parish to be dealt with in a succeeding volume.

We are given the map of Lincoln's Inn Fields as they existed in 1592, with the present streets and buildings indicated by dotted lines over them. The site then consisted mainly of a large field called Cup Field, about the same size as the present square, with a ditch running north and south through the centre of the field; and Purse Field, a long narrow field westward of it, running north and south, the western boundary of which coincides with the eastern margin of Kingsway; and on part of Purse Field stand the houses on the west side of the square. Though it is evident enough that the Fields in the sixteenth and early seventeenth centuries were little better than waste land with a great deal of rubbish dumped on to it, the Society of Lincoln's Inn seem to have attached much

importance to this open space, and the story of their repeated efforts and petitions to prevent any building on it forms rather amusing reading. They did, however, in 1617, betray a desire to have the ground improved in appearance. The land to the north of Moorgate, outside the City, had recently been reclaimed from its marshy condition, and drained and laid out in walks as a place of recreation. This seems to have roused the emulation of the Society, who petitioned the King that "the feildes commonly called Lincolnes Inne Feildes, being parcell of his Ma^{ties} inheritance, might for their generall Commoditie and health be converted into walks after the same manner as Morefeildes are now made to the greate pleasure and benefite of that City"; a petition which the King did not only "take in very gracious and acceptable parte," but even voluntarily enquired, a year later, after the success of the scheme. A commission was in fact appointed to lay out Lincoln's Inn Fields in "faire and goodlye walkes" which would be not only a means of health and recreation to the inhabitants of the neighbourhood, but "for the sight and delight of Embassadors and Strangers coming to our Court and Cittie"; and on this commission sat no less a person than Inigo Jones; but it led to nothing at the time, and apparently it was not until the square had been built round in the latter part of the seventeenth century that any laying out of the land seems to have been done. An engraving is given of a picture at Wilton House, of the probable date of 1683, showing the square with houses on three sides (whether actually built or only as proposed seems doubtful), and the open space with railed diagonal walks. There is not a tree shown; these must have all been grown or transplanted at a later period. Dated 1699 is a bird's-eye view of a rather good design by one Cavendish Weedon for laying out the square with a temple in the middle (for which Wren made a design), and wide



NOS. 59 AND 60, LINCOLN'S INN FIELDS.



CHIMNEYPiece IN FRONT ROOM OF FIRST FLOOR
NO. 35, LINCOLN'S INN FIELDS.

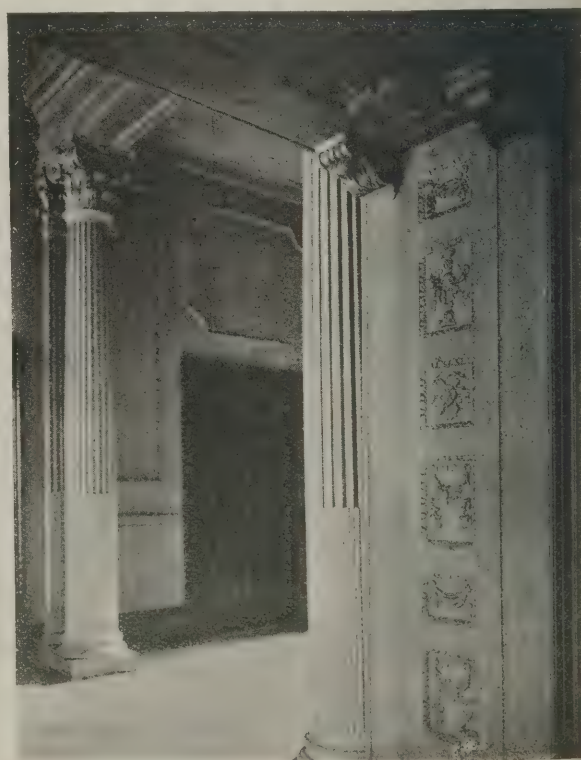
cross-walks at right angles, with circular bays with a statue in the centre of each; buildings are shown on two sides only; but in spite of such proposals it seems that as late as 1735 the square is described in an Act as waste and in great disorder, "a receptacle for rubbish, dirt, and nastiness of all sorts," and a dangerous place to walk through at night. In this year the inhabitants of the square obtained an Act to enable them to rate themselves for the improvement of the square, and it was decided to lay it out with grass and gravel walks, with iron palisades on a stone plinth, and a circular basin of water in the centre. This basin seems to have been a trouble to the Trustees, and was filled up in 1790, "after much debate and opposition among the inhabitants." The garden was rearranged on its present plan early in the nineteenth century.

With the voluminous history that is given of the families and eminent persons who have been connected with the square, interesting as they are, we cannot concern ourselves here; our business is with the architectural relics. It may be noted that there has more than once been a proposal to build a church in the centre of the square; Colin Campbell made a design for one in 1712, and applications with the same object were made in 1819 and 1824. Subsequently a suggestion was made that the Courts of Justice should be erected in the centre of the square, and Sir Charles Barry actually made a design for them on this site. It is fortunate that this proposal was abandoned; but a fine church in the centre of the square, as at The Boltons, might have done very well, if the square had maintained its residential character. But residential London was steadily moving westward, and the square, for the most part, fell from its high estate in this respect, and the once desirable residences were mostly cut up into offices. It was this change which led to the square garden becoming deserted and useless, and suggested to the County Council their wise and beneficent action in securing its use for the public.

As to whether the dignified-looking front to Nos. 59 and 60, of which we give an illustration, is really due to Inigo Jones, there seems to be no positive evidence; but it is not unlike his work. Considering that he was on the original Commission for laying out the square (though he is not known to have made any design for that), it is exceedingly likely that he would have been called on to design some of the houses; and at all events the two grand brick gate-piers, which are really the most important outdoor architectural relics to be seen in the square, bear the manifest impress of his hand. Among the other exterior architecture of the square, the portico of the College of Surgeons has rather a curious history. It was erected by Dance, the younger, in 1813, with unfluted

columns. When the extension of the premises became necessary in 1834, Barry was called in to erect a new and larger building, but Dance's portico was re-erected; only, as the axis of the building had to be altered, this was effected by removing two of the columns from the west end of the portico and re-erecting them at the east end; and under Barry's directions the columns were fluted, which undoubtedly improves their appearance. An interesting sketch by Scharf, forming Plate 44 in the book shows the building operations in progress, and five of Dance's columns, with part of their entablature, standing in front of the work. Probably few who pass that portico know anything of its curious history. Another interesting elevation is the one which Soane made for his own house, No. 13, now the Soane Museum, with an interior full of interest both in regard to its plan and design and its contents, known to but a small section of the inhabitants of London. The front is a very interesting and original piece of architectural design based on Greek ideas, and it looks, from the point of view of the present day, remarkably modern in style; the details might have belonged to a building erected within the present decade, except for the two late Gothic capitals, or models of capitals, which form rather awkward-looking excrescences on two of the piers.

But the interiors which are now cut up into offices contain a wealth of charming and interesting detail. Some of the wooden staircases are admirable, especially that in Nos. 33 and 34, where the usual spirally-turned balusters are interrupted at intervals by a miniature fluted column and capital, above which the handrail is raised by a slight ramp, to give additional point to the incident. The plans of some of them, and the ingenious way in which the elliptical staircases are worked in, deserve attention. On the staircase of No. 35 is a fine iron balustrade, and on the first-floor landing a still finer open-work panel, of which we give an illustration; this, as the editor remarks, recalls Jean Tijou's ironwork. But No. 35 is full of fine work of different kinds; from its illustrations we take also that of the very fine and unusual design of a chimneypiece in the front room on the first floor. The door-case of the same room, with a pediment and Ionic columns, is also an excellent piece of work of its kind. On the ground floor of No. 59 is a remarkably fine alcove, under a segmental arch panelled on the soffit, and springing from an entablature carried by Ionic columns on each side.



NEWCASTLE HOUSE, LINCOLN'S INN FIELDS: THE HALL.



WROUGHT-IRON PANEL ON LANDING, NO. 35, LINCOLN'S INN FIELDS.

It seems quite a pity that all this beautiful interior detail, once the pride of the owners, and the objects of admiration, no doubt, of their visitors, should now be buried in offices and other rooms to which there is, in the stock phrase, no admittance except on business. A publication like the one under review is of value merely in making such work known by illustrations, independently of the amount of interesting history contained in its text. We hope the joint publication will go on successfully and give us many more such volumes. We shall look with interest to the promised fourth volume, dealing with the remainder of the Parish of St. Giles-in-the-Fields, including Flitcroft's celebrated church.

Regent's Park in the Making.

AMONG the interesting quotations which the "Times" gives us of events 100 years ago, a recent one gave some account of the making of Regent's Park, which enabled us to see the scheme as it was seen by the public at the time it was undertaken. The grand entrance to the new park is, we are told, from Portland Place, "which is now extending towards the south on the site of the recently demolished Foley House" (where the Langham Hotel now stands); so that the conclusion is that Portland Place was commenced at the north, and not, as would have seemed more natural, at the south end. The liberal width of the street, so different in this respect from most London streets of the period, or even of the present day, is owing to the fact that the owner of the mansion which then stood on the Langham Hotel site had a clause in his lease covenanting that no houses were to be built to the north of his house, to destroy his country view; so, to fulfil the letter of the law, the street had to be made the same width as the mansion, with a result very satisfactory to us at the

present day; one can only wish that more London streets had been laid out under such conditions. After the mention of Foley House, there follows a complaint that "the new buildings here do not appear to be constructing with any suitable regard to the elegant uniformity of Portland Place." It is not easy to understand what "here" means, and what were the buildings which were unworthy of the "elegant uniformity" of the new street. The account goes on to state that "at the north end of Portland Place a circus is forming, surrounded by trees, across the centre of which runs the new road," so that the road was originally to have run straight on through what is now the garden in the middle of the crescent. Nothing is said of houses in the crescent, which, apparently, was at first only an ornamental laying out of the plantations. The large lake does not seem to have been contemplated in the first instance, as it is only said that advantage will be taken of the means the ground affords for increasing the picturesque beauties of the spot, "by the formation of two or three sheets of water in the level situations." The account, while generally praising the work that is in progress, concludes by admitting that "not a few will regret the loss of those open and verdant fields which formed one of the most airy and pleasant resorts of the pedestrians of the metropolis." But a park in process of formation is never a very encouraging sight; it needs half a century or so to settle down.

Municipal Improvements in Paris.

IT is rather amusing to read that when the Paris Municipal Council held its final meeting before the elections, the President (M. Roussel), in reviewing the work which was proposed to be done with the £36,000 voted for municipal improvements, spoke of "a great scheme in the air for laying out spacious boulevards which would run right



NEWCASTLE HOUSE, NOS. 66 AND 67, LINCOLN'S INN FIELDS, LONDON.

round the city, on the lines of the present fortifications and moats, now antiquated, dilapidated, and useless." Why, the scheme has been "in the air"—been talked of and promised, for at least thirty years back! Definite proposals have been made for carrying it out, time and again, which have all fallen through because no capital was forthcoming to take it up; and now it comes up again in the newspapers as a new idea. No doubt it is a scheme which might have very fine results, but the only chance, apparently, of seeing it carried out is that the Paris municipality should itself take it up and find the necessary capital. If that is part of the work on which the 36 millions is to be expended, it will no doubt be a great Paris improvement, and it may in the long run be a paying one; but it will make a considerable hole in the 36 millions. It is satisfactory to find that the improvement of the Paris water supply enters into the municipal schemes. The water supply has been the weak point in Paris for many years, both in respect of quantity and quality; there has never been enough water, and what there was has never been really satisfactory as drinking water. We remember a year when the hydraulic lifts in the large hotels could hardly be worked owing to want of water. There has been scheme after scheme for

enlarging the supply, but the demand seems always to exceed the supply. It is to be hoped that some final settlement of the matter will now be arrived at.

The Architecture of the New Delhi.

WE see that the question is already being raised in Anglo-Indian circles, What is to be the style of the new Government buildings and the new town (for it will be practically a new town) of Delhi? It is one of the largest architectural questions that could be raised, and one of the most difficult to answer. The Romans, in a similar case, would at all events have had no doubt whatever. For them Rome was the one important entity in the world; she was the mistress of the world, she was to say how things were to be done. Wherever the Roman eagles went, there followed in their train the Roman triumphal arch, the Roman forum, the Roman theatre, and the Roman aqueduct. The latter was an unmixed blessing to the conquered land; it did not pretend to be architecture, it was a useful engineering construction only, bringing an adequate water supply. For the rest, if the usual type of Roman architecture was good enough for the



The Original Campanile, which collapsed on July 14th, 1902.

THE REBUILDING OF ST



Photo: Underwood.

The new Campanile, inaugurated on April 25th, 1912.

CAMPANILE, VENICE.

conquerors," it was "believed to be certainly good enough for the conquered. They should be taught what architecture meant.

In the earlier days of our sway in India we pursued nearly the same course, not from any particular interest in architecture, but rather the reverse, from absolute indifference. The kind of men who had to battle with the difficulties and dangers of early English rule in India were not the people to trouble their heads much about art; they had more serious business in hand. When new buildings were wanted they were wanted for practical purposes; Government and business buildings were built in much the same manner as they would have been built in London, and Calcutta Cathedral was erected in Batty Langley Gothic. Now we have become aware that we have become rulers of a country which possesses a great deal of beautiful art quite different from our own, and the question is raised, If we build a new city there, for Western rulers among an Eastern people, is it to be Western or Eastern architecture? It is rather important, for we ought to do ourselves architectural credit with our new city.

It cannot be settled merely on æsthetic grounds, for the climate is an element in the choice. Were the climate and the light the same as in England, the Roman principle would really be the best; to put up our best architecture at Delhi as we should put it up in London. That would be the best architectural symbol that we are the rulers, and therefore bring our own architecture with us, as the Romans did. But the climate will not allow that. We have to keep the tropical heat off the walls, and to have verandahs or loggias for shelter from the sun, and smaller windows than in England, where we are glad to have all the light we can get. And mouldings and sculpture which have sufficient shadow and relief to be effective in a northern climate would seem far too pronounced in effect under an Indian sun. The simple transplantation of European architecture to Delhi obviously will not do.

There is the opposite course, of completely adopting an indigenous style; accepting, for instance, the school of architecture left as a legacy by the great Indo-Saracenic builders of the sixteenth and seventeenth centuries. There is something to be said for this, in view of the fact that we should have to employ native labour. There is a kind of precedent for this in the architecture carried out in Sicily under the brief rule there of the Normans. They obviously employed the Saracenic artists who had already had a footing on the island, and we see buildings which we know were built under Norman rule, but which are all but Saracenic in general character. But except in regard to some beautiful decorative detail, the result is not very satisfactory; there is an uncertainty of motive and a rather barbaric jumbling of different types of detail in most of these Norman-Saracenic buildings. The Normans obviously did not bring their own architects with them. We certainly wish to bring ours, or some of them, to Delhi; in fact, there will be great searchings of heart if we do not. And it seems not only suitable, but desirable, that new Delhi should bear the architectural impress of being a product of British rule.

The true solution of the problem seems to be this: the architecture should be designed by English architects, and should be founded in its main lines on the English public architecture of the present day; which may be taken to mean, generally, free Classic style; but modified in planning, details, and decoration to suit the climate, and to some extent to recognise Oriental associations. That would mean, in the main lines of the architecture, cornices of considerable projection, to keep the sun off the walls, and the introduction of open loggias or verandahs as far as they can be made to fall in with the plan. And as far as detail is concerned, it would mean less dependence upon mouldings, the effect of which is apt to be exaggerated in strong sunlight, and more dependence on surface decoration in colour. In the natural course of architectural development strong sunlight has always seemed as it were to bring out colour in a national architecture. And in regard to mouldings, we see the effect of the difference between southern and northern climate exactly expressed in the difference between Greek and Gothic mouldings. The deep rolls and deep hollows of Gothic mouldings are exactly

what were wanted for effect in the climate in which they were developed; in the climate of Greece they would never have been introduced, for they would have been felt to be too emphatic. We should study for effect in new Delhi, therefore, by delicate mouldings and a considerable use of colour in inlaid materials. On these principles something like a new style might be evolved, based on European Renaissance architecture in its general lines; based on Oriental style in its detail.

On such lines it would be possible to produce some fine results with the modern Anglo-Indian architecture for which there seems likely to be new opportunity of development.

Roads and Town Planning.

THE question of economy in road-making, in the laying-out of new residential estates, was a prominent one in the recent Housing Conference, and is rather a new practical point in connection with the subject. Mr. Jeffes, the surveyor to the Malden and Combe Urban District Council, read a paper on the subject, contending that under present by-laws roads were often made wider than was really necessary for what might be called side roads, merely for access to houses, and on which the traffic only consisted in the supply of goods to the houses. In a 40 ft. street the carriage-way was usually 24 ft., with an 8 ft. footway on each side. He said that the lay-out of these streets allowed of little variation to meet special circumstances, and imposed the same requirement as to width of carriage-way in streets taking a considerable amount of traffic as for streets where the traffic was light. He thought it was possible, in the case of such streets, to allow of a reduction in the width of the carriage-way, giving more space for footway and for the planting of trees; also that the widths of the streets between the fences might be reduced, thus allowing more variation, and giving to the houses some of the land at present used as a roadway. This is a point that certainly deserves consideration. There is no doubt that a roadway which is wider than is really necessary for the traffic to be counted upon means so much wasted space, besides the cost of making the roadway. The question whether there could be any economy found in the construction of carriage-ways led to a rather lively and amusing discussion. The chairman, Alderman Thompson (one of the ablest of chairmen in the conduct of a meeting), mentioned a case where clay suitable for brickmaking was found on an estate, was sent up to the neighbourhood of London to be made into bricks, and came back to the estate in the form of brick rubble for the hard-core for the roads. Why, he wanted to know, instead of paying the carriage of that clay to London and back, could it not be treated on the spot in some way suitable for the purpose and taken direct to the making of the road-bed? The opinion of surveyors present, however, was (and we have little doubt that they were right) that there was no alternative means of rendering the material hard enough for a road-bed. But the papers on the subject, and the discussion, certainly went to show that subsidiary roads on building estates are often made wider than is absolutely necessary, and that economy in that direction might be very well practised.

THE REBUILDING OF ST. MARK'S CAMPANILE.

GR^{EAT} rejoicings have welcomed the completion of the new Campanile of St. Mark's, which has been erected at Venice in imitation of the old one, but we do not know that this jubilation was of the wisest. The old Campanile had been a part of the history of the city; it had grown with the city's growth and importance, and with the lament of the citizens over its fall one can sympathise entirely. But the fact remains that it was an ugly erection, added to at different times without any regard for proportion and architectural unity, and its value was certainly historical rather than architectural. A new campanile built up in the likeness of the old has no historical value; but unfortunately, while this element of interest is lost,

its architectural faults have been carefully and conscientiously repeated. It is difficult to see what Venice gains by the proceeding; she has lost the real thing and built up a sham one at an immense cost, which might have been better expended. But the most important point in connection with the proceeding is the light which it throws on the manner in which architecture is now regarded, in Italy apparently at all events. It seems to consist simply of a worship of the past. In any age in which architecture as an art was a subject of real interest, if an old building fell down the immediate ambition would have been to replace it by something better; more than that, old buildings were deliberately destroyed for the purpose of putting something better in their place, in the proud consciousness of a capacity to do so. Now, an ugly and awkward-looking tower having fallen, the only desire seems to have been to replace it by an imitation; a proceeding which needs no architectural genius, nothing but the requisite cash. If the modern Venetians had been inspired by the genius of their forefathers, what they would have done would have been to organise a grand architectural competition for the design for a new and better campanile, since a campanile they must have. In doing so they would have given an immense impetus and encouragement to tower design, they would have excited the architectural interest of all Europe, and they would most certainly have obtained a finer campanile than the one they have lost. But no; they must have the same thing over again, beautiful or not, because it was there before. How far is such a principle to be carried? If St. Mark's should some day fail (and knowing what one does of Venetian foundations it seems only too possible a catastrophe), will they build a copy of it?

As the Centre Plate in this issue we give two views of the Campanile, the original structure which collapsed on July 14th, 1902, and the new tower which was inaugurated on April 25th by the King of Italy. The old Campanile, had it stood till next month, would have been 1,000 years old. It suffered greatly from lightning and earthquake, and it was these, coupled with the disintegration of the mortar—not any subsidence of the foundations, which were and are thoroughly sound—that brought about the collapse. In the rebuilding the foundations have been widened, the old method of piling being followed. Altogether 3,076 larch piles have been driven, of an average diameter of $8\frac{1}{2}$ in., and 13 ft. in length. They are calculated to carry about 90,000 tons, whereas the weight of the new tower is estimated at 20,000 tons only.

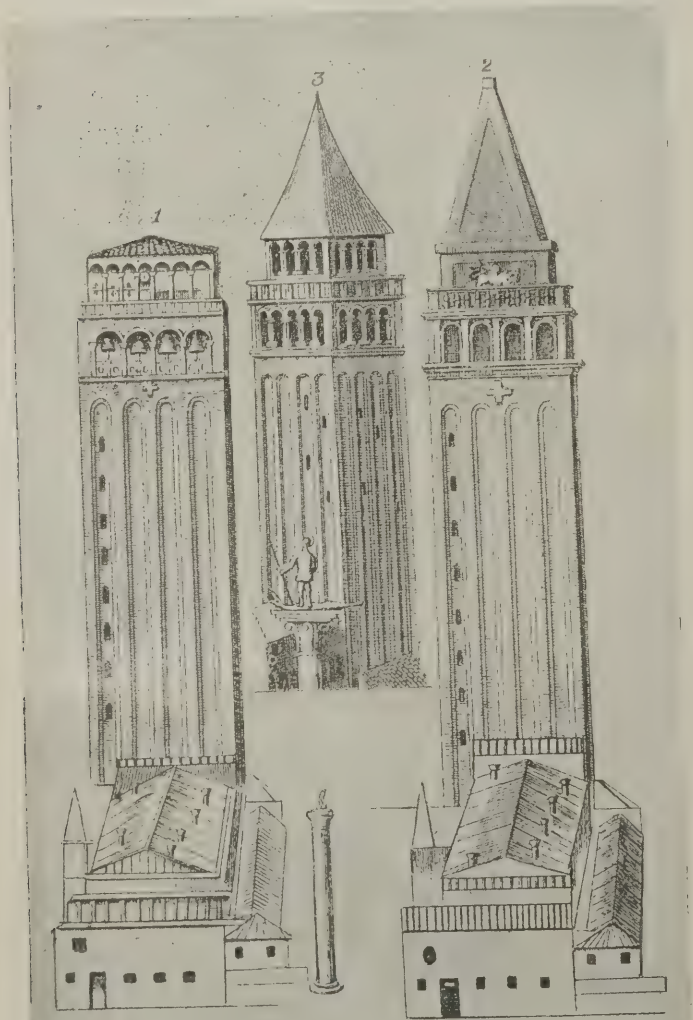
The pile-driving was completed by October 8th, 1904; and then arose a problem of bonding the new foundations into the old in such a way that they should receive and distribute the weight over the new foundation area. The old foundations were incised all round to the depth of 8 ft., and the upper layer of the new platform was laid over the lower layer of the old. This process of bonding virtually decided the fate of the old foundations, only 200 cubic metres of the old remaining as a mere nucleus in the centre of the tower. On the top of the new platform come the new foundations, eleven courses of Istrian stone, dressed and carefully cemented. The blocks are bonded into the old foundations to the depth of 6 ft. 6 in.; and thus, as Mr. Horatio F. Brown points out in the "Times," the new Campanile is carried almost entirely on new foundations and a new platform, and partly on new and partly on old piles.

The base of the old Campanile consisted of five steps, all of them originally visible. When the Town Council voted to rebuild the tower "where it was and as it was," they had not asked the question "as it was when it fell, or as it was when it was built." Were all five courses to be visible as when the Campanile was built, or only two and a half, as when it fell? After a long discussion, the question was decided in favour of five steps; and that marks almost the only difference between the new and the old towers; except, also, that the new Campanile has a lift.

The building of the new shaft presented no great difficulties. It is a magnificent piece of brickwork, and reproduces the old shaft exactly, save that for the sake of lightness there are only four instead of eight pilasters in the inner tower. The bricks were specially made at Casale on the Sile near Treviso. They are of a peculiar size, 12 in. by 6 in. by 3 in.; and as they contained a considerable amount of salt, which was apt to produce a white efflorescence, before being used they were soaked for seven days in tanks whose water was changed every twelve hours. The colour of the new shaft is, perhaps, a little rosier than that of the old.

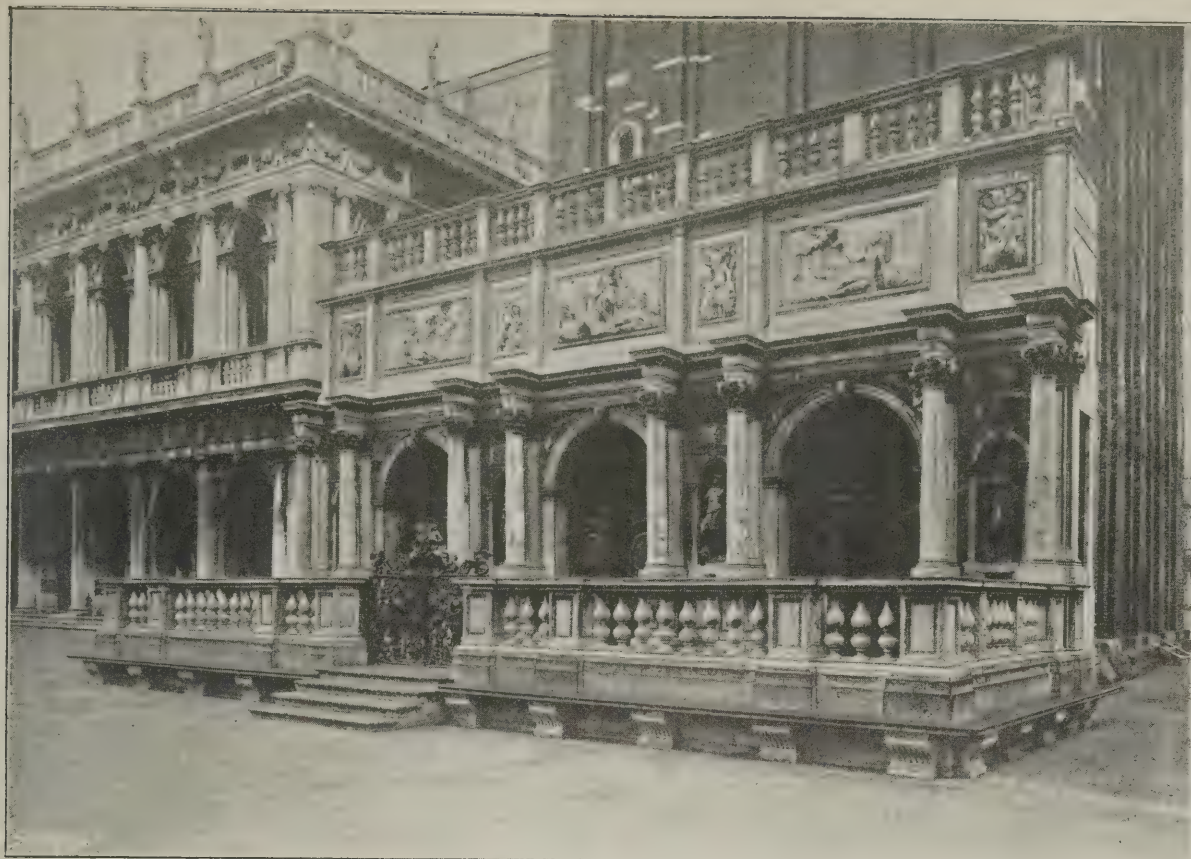
The bell-chamber is an exact reproduction of the original. The five bells, except the largest, which was intact, have been refounded at the charges of his Holiness the Pope; and his name, perhaps for the first and only time, appears in conjunction with that of the King of Italy in the commemorative inscription. The attic above the bell chamber has recovered its two lions of St. Mark, defaced at the time of the French occupation; the shell of the new pyramid is of reinforced concrete instead of brick, the outer casing of copper and the ribs of Istrian and Verona marble being identical with the old; the angel has been recast, but is carefully modelled on the angel of 1822. In short, the new tower faithfully reproduces its fallen predecessor. The loggetta at the foot of the Campanile, erected by Sansovino in 1540, originally used as a meeting-place for Venetian nobles, and later as a guardroom for the soldiers during the sessions of the Great Council, has been perfectly reconstructed, as practically all the fragments of the four bronze statues that adorned it, its decorative reliefs, and its bronze gates, have been saved and used again. The exact dimensions and measurements were found in old MSS.

The cost of the rebuilding has been £88,000. Its height is 352 ft. Signor Doughi was the architect in charge of the work.



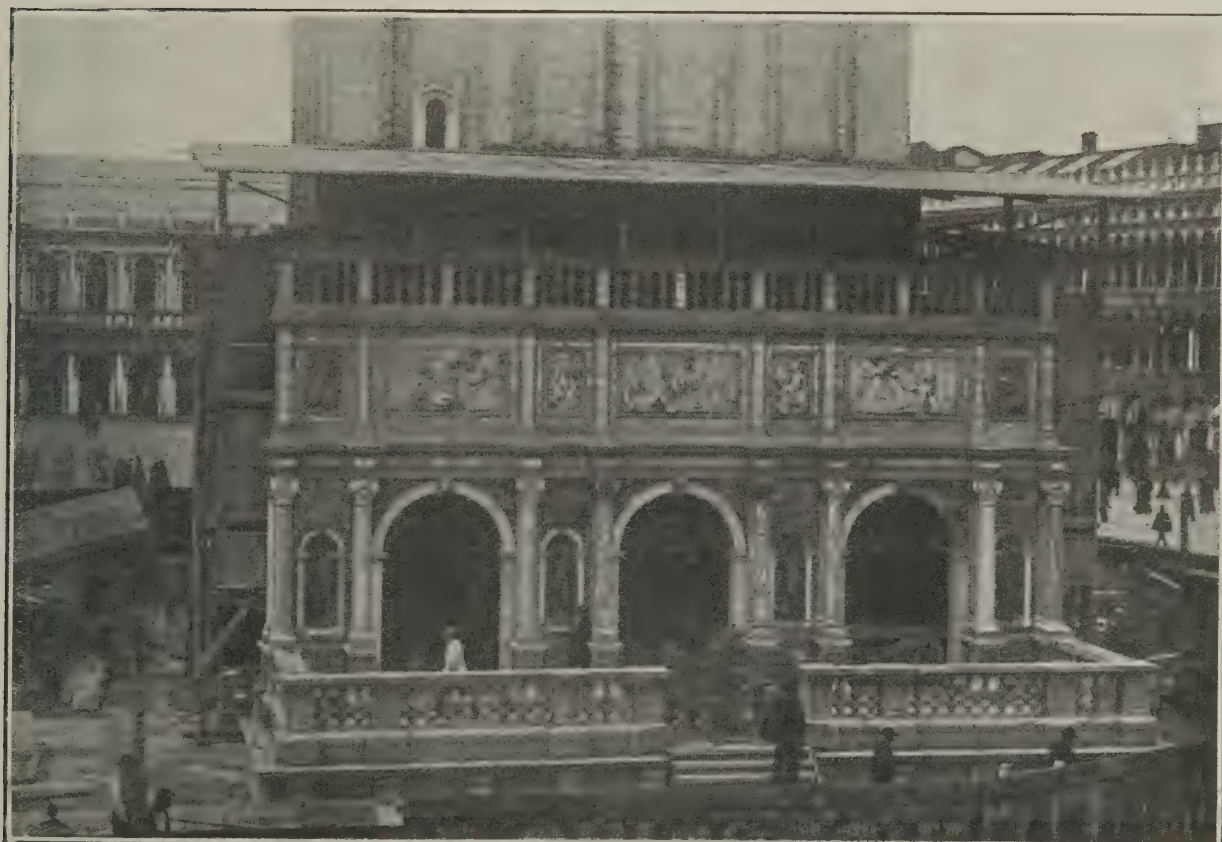
SOME OLD VIEWS OF ST. MARK'S CAMPANILE.

1, as given by Jacopo de Barbari, 1500; 2, as finished by Mastro Buono, 1513;
3, as given in Breydenbach's "Peregrinatio," 1486.



Sansovino's Loggetta, before the Collapse.

Photo : J. C. Ashton and E. Dockree.



The Loggetta, as Rebuilt.

Photo : Record Press.

THE REBUILDING OF ST. MARK'S CAMPANILE, VENICE.

PROFESSIONAL PRACTICE
AND A CODE OF ETHICS.

Extracts from a paper in which Mr. C. McArthur Butler, F.C.I.S., opened a discussion on this subject before the Society of Architects on April 11th, were given in our issue of April 17th. A condensed report of the ensuing discussion here follows:—

DISCUSSION.

Mr. B. G. Lovell, A.R.I.B.A. (Member of Council), in moving a vote of thanks to the secretary, said he thought that the idea of forming a Board of Professional Control was a very excellent one, provided an assurance was forthcoming that it could be got together promptly. If, with the object of gaining greater unity, they were to wait for the co-operation of all the allied societies, the Royal Institute, and the other institutions mentioned, he could easily foresee that the matter would drag on for as long as their previous negotiations with regard to registration. The Society prided itself upon the fact that it was the forerunner of registration, and he saw no reason why they should not adopt the same attitude with regard to the suggested Code of Ethics, and he thought the Council would be acting in the best interests of the profession by pushing the matter forward immediately. He could not see any difference between putting the architect's name on a board and having it engraved on a corner-stone of a building; and he would urge that a very comprehensive view of this question should be taken when the matter came up for consideration.

Mr. A. O. Collard, F.R.I.B.A., in seconding the vote of thanks, said the subject appealed to him as a lecturer at the A.A. School for something like fifteen years on professional practice. He thought it would come as a surprise to many architects that any such suggestion as a body to control professional practice and to institute a code of ethics was necessary or desirable. Many of them, he assumed, managed to get along in the profession without committing any professional enormity. It would be a very delicate matter, but he would like to receive some indication of the extent of the misdemeanours which actually were known to happen and which had occurred in the past. He thought the offences, whatever they were, should be tabulated and classified. He thought Mr. Butler's suggestion might be carried out so far as requesting the different societies to appoint delegates to consider whether a Board of Professional Control was really desirable, and it would be absolutely necessary to decide the matter one way or another in the minds of those gentlemen by informing them definitely of the nature of the things which had happened.

With regard to specific charges of architects, he noticed that it was suggested that a minimum charge should be made. He thought with Mr. Butler that it was a very doubtful advantage to have any fixed charge whatever, and that it would be better to leave it open so that a man could charge whatever he thought himself worth. There should be nothing to prevent a man charging 10 per cent. if he thought he could get it, as they were well aware that in certain special work a man might have trained himself thoroughly and the value of his work be worth two or three times as much as the ordinary scale gave him.

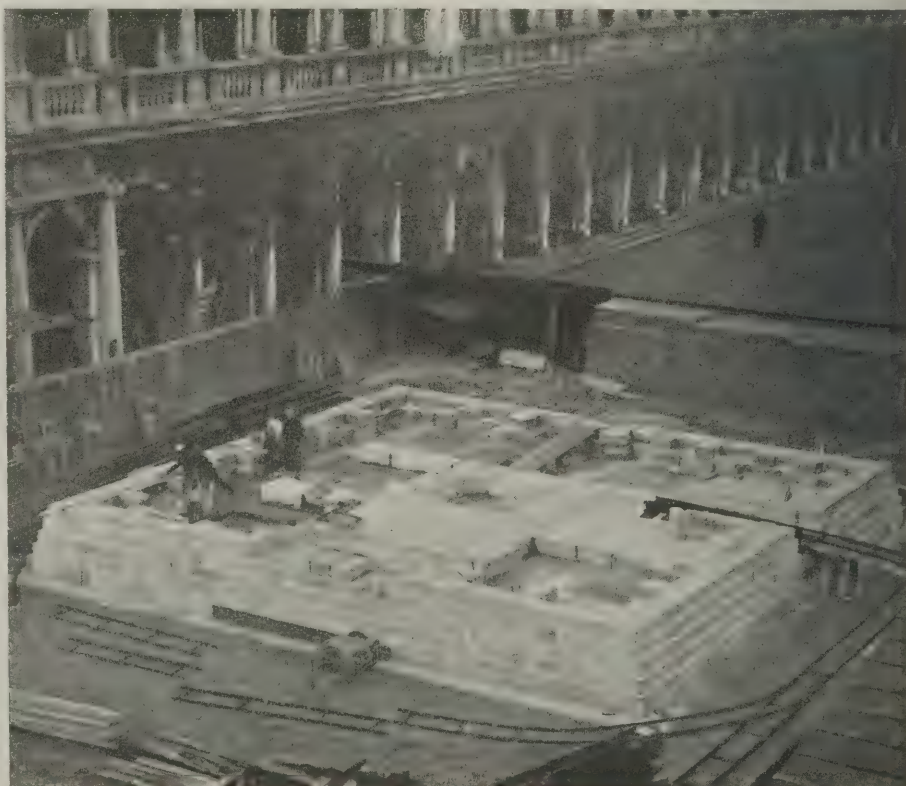
With regard to advertising, he could not see the difference between putting one's name on a board and putting it on the building after completion. Although he had never done either himself, he thought if the architect were to put the design on the board as well as his name it might help matters, because they could then see the beauty or the wretchedness of the building, as the case might be, side by side with the name of the architect who was responsible for it.

Mr. W. H. Seth Smith, F.R.I.B.A., after enumerating the points or principles of policy or conduct that, in operation, had vastly improved the public esteem for professional men, said that the policy was in short:—(a) To benefit the public by giving the very best of services; (b) to benefit their members by fellowship and by due preparation for professional duty, and thus enable them to reap the confidence, work, and pay which invariably result from such a policy; (c) By organised resistance to frustrate attempts on the part of individuals, corporations, or of the legislature to impose unfair or unjust conditions on their members. Should such moral or legal resistance be abortive, the obvious and final resort was the corporate withdrawal of service. This weapon the medical profession had been obliged for the first time (last winter) to threaten to use, and architects, though not so immediately affected by democratic employment and democratic legislation, have had to adopt in a more limited degree by their recent agreement not to enter competitions under conditions unfair to their members. It is abundantly clear, therefore, that the confidence they had won has been much more due to an ethical policy rather than to one of expediency, and in discussing the question he hoped their past experience would encourage them to continue on these general lines while seeking to elucidate, emphasise, and enforce them. The great value of statutory registration would be, as Mr. McArthur Butler premises, the bringing of the at present detached architect under a

commonly accepted code of architectural etiquette, but legislation directly or indirectly compelling any man to join a professional body would be a gross breach of the liberty of the subject, and should never be suggested in applying for a Registration Act.

Mr. Arthur J. Martin (President of the Institute of Sanitary Engineers) said that with regard to some points of professional conduct, the value of rules of conduct lay not so much in the hard-and-fast line which they drew as in that it defined for the information of all concerned what should be the practice of the profession. He did not think it was practicable to enforce a scale of fees; it would be a mistake to treat it as a maximum, and it would not be fair to the young men to enforce it as a minimum; and on the other hand, if a scale were not rigidly enforced it would be useless. It would be of very great use for a professional man to be able to say that the recognised scale of charges for such and such work was so much, and that a man was not justified in accepting anything less unless he was a young man. The great question appeared to him to be that no person should be at liberty to represent himself as an architect or engineer without possessing the necessary qualifications for the title. Personally, he could not see any reason whatever why an incompetent man should be at liberty to practise in either of these professions any more than he was able to as a solicitor, medical man, or dentist. In their profession, just as much as those he had mentioned, the incompetent man was a danger to the life and health of a large number of people. It was not a matter for the profession to determine, but one which the general public had a right to demand. What that qualification should be was another matter.

Mr. A. S. E. Ackermann, B.Sc., A.M.Inst.C.E., said he thought more attention might have been drawn to the professions of law and medicine, from which they might learn a very great deal



ST. MARK'S CAMPANILE, VENICE: VIEW OF BASE IN COURSE OF ERECTION.

from their experience. Some years ago he had had occasion to make enquiries of the British Medical Association in regard to the question before them, and he was astonished to find how deeply they had gone into what was more or less an unwritten law. Quite recently a code of ethics in connection with medical consultations had been published, giving details even so far as the order in which each man should enter the patient's room.

Mr. A. Alban H. Scott, M.R.San.Inst. (Member of Council), said that most of the discussion had turned on the question of architects' fees, which he thought a great pity, because architects usually looked upon their fees as a secondary consideration, and did their work for the work's sake. With regard to the remarks which had been made as to the principle of payment by commission being an immoral arrangement, no doubt it was an unhappy one, but the young architect, he thought, fully realised that his career would be made not by his financial income or by piling up the cost of the work, but by getting economical buildings for his client and making, and afterwards maintaining, a proper reputation. Architects would benefit by a greater professional unity. He thought that advertising should not be allowed in any form. If it were permitted at all it would be very hard indeed to draw the line anywhere; for instance, if an architect were allowed to put his name upon a board it would be necessary to make a rule limiting the height of the letters, and so forth. Nothing was more degrading, he thought, than for a professional man to have his name appearing on a board in letters two feet deep. Fancy a lawyer or a medical man committing such an indiscretion! Architecture would never gain the respect of the public if such things were permitted. He did not think a job was ever gained by advertising, and it was simply lowering the profession to the position of a trade. He thought the suggested Board of Control an excellent idea, because in the case of an honourable architect having suggestions made to him regarding his reputation it would be quite a simple matter for him to submit the case for thorough investigation by the Board of Control, when he would be immediately protected from further slander. The scale of charges should, he thought, be entirely omitted.

Mr. A. Lawrence Cox, F.S.I., A.M.Inst. E., said with reference to advertising that some professional bodies raised no objection to it, while others did. He thought it made very little difference whether they as a Society objected or not, for architects would advertise in some form or another, although there were some extraordinary creatures who apparently did not care for publicity or remuneration of any sort. He saw no reason why advertising should not be permitted, so long as it was indulged in moderately.

The Chairman (*Mr. Percy B. Tubbs, R.I.B.A., Vice-President*) then summed up the discussion, and said he personally hoped that a Code of Ethics would be adopted, and that the Council of the Society would appoint a committee to inquire into the matter. He would very much like to see a Board of Professional Control as suggested by Mr. Butler. He thought it quite possible that if it were properly constituted it might ultimately develop into the registration authority if they were so fortunate as to get a Bill through Parliament. With regard to the charging of commission, he quite agreed that it was absolutely wrong

in principle, and ought to be altered at the earliest possible moment.

A vote of thanks to Mr. Butler was then put to the meeting and carried with acclamation.

Mr. C. McArthur Butler said he would reserve his reply—for the Proceedings.

The following extracts are taken from communicated criticisms:—

Mr. G. A. T. Middleton, A.R.I.B.A.: Perhaps it may be open to debate whether a written code is so good as one which is understood, as leading to possible harsh decisions when circumstances might warrant a lenient view being taken. At the same time, the value of strict discipline is great, and machinery for its universal enforcement, with safeguards for even-handed justice, are much needed. His impression is that the inclusion of some representatives of the public on the Board of Control might be essential to secure this in all cases. It has also been suggested to him that a point should be made of forbidding a custom, by no means unknown, of giving commissions for the introduction of work and for information of work likely to come, to officials, perhaps, of public bodies, enabling members of those bodies to be "got at."

Mr. A. B. Hayward: The ownership of drawings is one of the most important things to be remedied at the present time. It is most unjust that the client should be considered the owner of them in the eyes of the law, they being merely the instruments employed by the architect to produce the building ordered by the client, and as such should be as much the property of the architect as his tee-square or five-foot rod. The scale of fees as sanctioned at present appears to work fairly well on the whole, except when it comes to the question of paying for applications to County Council, Local Councils, drawings for District Surveyor for certificate or, in the case of public buildings, for his use. The architect must be paid for these, yet the number of them required has increased considerably of late years, and the scale as issued by the R.I.B.A. hardly makes it sufficiently clear that fees for such work are over and above the 5 per cent., and in the scale sufficient emphasis is not made of the fact that these charges in some cases amount to a considerable sum, and clients are not clearly led to understand that this work entails much extra labour and trouble to the architect. With reference to advertisement the writer thinks the modern tendency originated by the Garden City movement exhibitions, and the newspaper Cheap House Brand of exhibition, is a mistake, and does harm to the profession. It is exceedingly difficult, if not impossible, for a young man not to participate in these when he sees his professional brethren, more distinguished than himself, doing so, and prize cottages being put up at almost impossible prices; and in his opinion, it would be entirely in the true interests of architects if the various governing societies would discourage them as much as possible, and do all in their power to persuade their members that it is undignified and unprofessional to take part in them. If they were frowned upon by the professional powers that be, he thinks they would die a natural and unregretted death. Illustrations of one's work in journals, books, papers, collections of designs of houses, etc., etc., seem to him to be quite fair and legitimate, and, if considered advertising, is legitimate advertising.

Mr. H. Freyberg, F.S.I.: If in drafting any code of ethics for professional con-

duct all architectural, surveying, and engineering institutions could first agree to certain general principles applicable to all members of those institutions, it would not only bind them, but also could not fail to influence unattached people and the general public. The general principles being agreed, each society could then deal with details particularly applicable to its own profession, and could formulate a scale of charges. This latter would necessarily have to be on elastic lines, and should in the writer's opinion insist on a minimum.

Mr. H. Guicharde Todd, F.S.A. (Scot.): The practice of ethics cannot be codified in relation to architecture any more than it can be codified to the practice of art, to which it is sister in ideal and temperament. To attempt to do so is to degrade the profession to mere commercialism. Experience has demonstrated beyond dispute that expressed codes play into the hands of the unscrupulous, who get round the written law and so justify their sordid dealings. It is useless to tell them that they have done a mean thing when they can triumphantly point to the written code and ask, "Wherein have I offended?" The true artist with the ethical spirit, not the written code merely, guiding him, will be more defenceless than ever, for the soul of real brotherhood in art will have been buried in this penal code, and there will be none to help. The real protection for the struggling artist or member of any honourable profession is the consciousness that he belongs to a body, to the members of which honour and honourable dealing have become as much part of their existence as the atmosphere they breathe. The integrity of the members of the Bar is undoubted. The personal honour of its members is their most cherished attribute, although the temptations must at least equal the temptations of the architectural profession. The Bar has no written code of ethics. There is something better—an unwritten code, infringement of which makes the defaulting member liable to be ostracised by his fellow-members of the Bar.

THE PICCADILLY IMPROVEMENT SCHEME.

The delay in connection with the carrying out of the Piccadilly improvement scheme has again been the subject of a letter addressed by the Westminster City Council to the Office of Woods and Forests. The council ask for an assurance that the work shall be begun at once and carried forward without loss of time, the purchased land being added to the public way.

It was originally contemplated to complete the scheme before the Coronation season, but a deadlock arose in connection with the rebuilding of Nos. 19, 20, Piccadilly, known as Denman House; and although £70,000 was paid as compensation to the parties concerned, so long ago as February, 1911, the Westminster City Council are still waiting to get possession of the semi-demolished premises.

In answer to a previous letter of protest, the Office of Woods explained that the delay arose from the fact that complex negotiations were in progress before the Crown as freeholder and various parties possessing leasehold interests, which, it was hoped, might result in the rebuilding being carried out so that the front elevation may be a completion, architecturally of Mr. Norman Shaw's design of the Picca-

dilly Hotel. The new protest is not based on purely æsthetic grounds, but is the result of a series of complaints from tradesmen in the neighbourhood that the delay in the rebuilding of the premises has been a source of serious handicap to business during the last twelve months.

TEST OF A KAHN BUILDING AT YORK.

The new Lecture Theatre which has been added to the Yorkshire Philosophical Society's Museum at York is now rapidly approaching completion, and the opening ceremony, which is provisionally fixed for June 6th, will be performed by Dr. Bonney, the distinguished scientist, and former President of the British Association.

Recently, the building, which is entirely constructed of reinforced concrete on the Kahn system, was inspected by the York City Engineer (Mr. F. W. Spurr), and the beams were thoroughly tested. The following are the particulars of the testing:—

Preliminary Tests.

Some difficulty was experienced at the commencement of the works in securing a satisfactory foundation for the many pillars on which the building is supported, owing to the existence of the old ruined stone walls, on which some portions of the new building are constructed. Much time and care were expended in examining the subsoils and in testing and calculating the bearing capacity of the clay bed which was found about 5 ft. below the present surface, which clay bed is the same one on which the ruined walls of St. Mary's Abbey are resting. How well these tests and calculations have been made is shown by the fact that in no single instance in the whole of the building is there a sign of an uneven settlement.

Concrete and Steel.

The materials that have been used in the construction of the building are screened river pebbles, gravel sand, and Earle's "Pelican" brand Portland cement, the steel used being Kahn open hearth steel. Frequent tests have been made of the cement, concrete, and steel, and all the results were wonderfully uniform and good. Great care was used in putting together the wood forms in order to avoid the necessity of treating the outside of the building with any form of plaster work, and the present surfaces of the walls, mouldings, and cornices, etc., are just as they have left the wood-work, with the exception that they have been cleaned down. The whole of the enrichments have been cast *in situ*, and are remarkably sharp and well defined.

A Record Span.

The roof is also in reinforced concrete, and is constructed at a height of 31 ft. 6 in. above the lowest level of the lecture theatre floor. It is claimed that the beams carrying the larger portions of the roof are the longest span of any flat beams in this country—namely, 46 ft. 8 in. clear span. The building has been designed by Mr. E. Ridsdale Tate, architect of the city, with Mr. W. Oldfield as chief of the works, and the contractors are Messrs. J. and T. Biscoomb and Sons, York, who have recently carried out works of a similar nature in that district.

Corporation Tests.

The building has recently been tested to meet the requirements of the York Corporation, who have to safeguard the

public in respect to the stability of buildings of a like nature. Eight very severe tests were applied in different places, and the city engineer reports that in no case did the deflection approach the amount allowable in work of this description. The test loads applied were, with the exception of the roof test, $2\frac{1}{2}$ cwts. to the square foot, being $1\frac{1}{2}$ times the load which the structure was designed to carry, and when the fact that the building has been designed with a safety factor of 4 is taken into account, it will be seen that better results it is nearly impossible to get.

The first test was on one of the beams carrying the lower portion of the lecture theatre floor, having a clear span of 26 ft. 9 in., and supporting a floor area of 26 ft. 9 in. by 10 ft. 3 in. This area was loaded up with 32 tons of ballast in bags equal to $2\frac{1}{2}$ cwts. per square foot, and the greatest deflection was only .066 of an inch, practically 1-16th of an inch, while the deflection allowable was .890, or nearly 9-10th of an inch.

The second test was made by loading a floor area 10 ft. by 10 ft. 3 in. with $13\frac{1}{2}$ tons of ballast, the deflection being .031 of an inch, or 1-32nd of an inch, when .33 of an inch (1-3 of an inch) was allowed.

The third test was applied to one of the long beams of 35 ft. clear span, carrying the stepped floor to the lecture theatre, and supporting a floor area of 35 ft. by 10 ft. This area was loaded with $40\frac{1}{2}$ tons of ballast, the actual deflection being only .047 of an inch, or about 1-20th of an inch, when any deflection up to 1.166, or 1 1-6th inches would have been allowed.

Test No. 4 consisted of $11\frac{1}{4}$ tons placed on an area 8 ft. 10 in. by 10 ft., supported by one of the secondary or raking beams. This deflected only .027, under 1-32nd of an inch, when .294 was allowed.

Test No. 5 consisted of loading one bay 8 ft. 10 in. by 12 ft. of the stepped floor to the gallery or upper portion of the lecture theatre with $13\frac{1}{2}$ tons of ballast, which produced a deflection of .015 of an inch (under 1-64th of an inch) when a deflection of .294 was provided for.

Test No. 6 was made by loading one of the long roof beams, 46 ft. 8 in. clear span and supporting a flat area of 46 ft. 8 in. by 10 ft. This area was loaded with $12\frac{1}{2}$ tons of ballast, being 60 lbs. to the square foot. The resulting deflection in the centre of the beam was .043, or just over 1-32nd of an inch, when a deflection of 1.555 or over $1\frac{1}{2}$ inches was allowable. Two other smaller tests were made on the roof, and the results were practically the same.

Mr. F. W. Spurr, the City Engineer and Surveyor of York, reports that "the deflections recorded were remarkably slight, and the tests throughout were very satisfactory"; and it is therefore almost superfluous to add that the results that have been obtained have given great satisfaction to all concerned. The accompanying table of the results of the tests was prepared in the City Engineer's Office, York:—

"City Engineer's Office, York,
17th April, 1912.

"Tests of floors and roof at New Lecture Hall, Museum Gardens, 16th of April, 1912.

The test load applied in each case was equal to $1\frac{1}{2}$ times the load for which the structure had been designed to carry—that is:—

Floors = 168 lb. by $1\frac{1}{2}$ times = 252 lb per sq. ft.

Roof = 40 lb. by $1\frac{1}{2}$ times = 60 lb. per sq. ft.

Test.	Clear Span.	Load in tons structure designed to carry	Test Load in tons.	Total deflection at centre of span in decimals of an inch
Test No. 1. Beams carried by columns numbered 24 and 25	26' 9"	21	32	.066
Test No. 2. Ground floor between last-mentioned beam and the front wall of building	10'	9	$13\frac{1}{2}$	.031
Test No. 3. Beam carried by columns numbered 20 and 21	35'	27	$40\frac{1}{2}$	.047
Test No. 4. One secondary or raking beam carrying the stepped floors	8' 10"	$7\frac{1}{2}$	$11\frac{1}{4}$	.027
Test No. 5. One bay of stepped floor to Galleries	8' 10"	9	$13\frac{1}{2}$	.015
Test No. 6. One main roof beam	46' 8"	8	$12\frac{1}{2}$	.043
Test No. 7. One secondary roof beam	8' 6"	2	3	.027
Test No. 8. One bay of roof flat	8' 6"	2	3	.027

"In no case did the deflection approach the amount allowed in work of this description."

OBITUARY.

Mr. D. N. Brims.

Mr. David Nicholas Brims, who died on April 16th after a short illness, was the founder of the firm of Brims and Co., Ltd., contractors, of Newcastle-on-Tyne, but had retired from active business five years ago. During his career Mr. D. N. Brims carried out many important engineering contracts on the Tyne and elsewhere, amongst them being the first Dunston Staiths for the North-Eastern Railway Company, the large dry dock of the Blyth Dry Dock Company, the quays and shipbuilding berths at Elswick Shipyard, a large dry dock at Bilbao, Spain, and very many wharves, harbour works, bridges, etc. He was one of the first contractors in England to carry out large works in reinforced concrete, the Co-operative Wholesale Society's building on the Newcastle Quayside being one of the first of its kind in England.

R.I.B.A. Necrology.

At the meeting of the R.I.B.A. held on Monday, April 22nd, it was announced that Mr. E. A. Kent, the eminent architect, of Buffalo, New York, was among those who had lost their lives in the "Titanic" disaster. A vote of condolence was passed to the sister of the deceased, his only relative.

The death was also announced of Robt. John Macbeth, Fellow, of Inverness, N.B. John Bevan Phillips, Associate, of Wyoming, U.S.A., Henry Shackleton, Associate, of Morecambe, and Edward Ashby Smith, Licentiate, of Acton Park, W.

THE ROYAL INSTITUTE LIBRARY AND SOME OF ITS CONTENTS.*

BY C. HARRISON TOWNSEND, F.R.I.B.A.

Mr. Harrison Townsend's paper serves a most useful purpose in calling attention to the treasures housed in the R.I.B.A. Library. Most of the critical comment and ana which accompanied Mr. Townsend's paper have had to be omitted owing to the limits of quotation imposed.

ONLY those who have carefully and systematically examined our collection of books know how fortunate we are in possessing many rare volumes of early works on architecture which are of exceptional interest. Thus, the library contains an extremely rare first edition of "The First and Chief Groundes of Architecture," by John Shute (1563). We have, from the Royal Library of France, the "Recueil d'Estampes de différents auteurs concernant les batiments, les tapisseries, tableaux, conquêtes et autres sujets qu'on trouve dans les maisons royales" (Paris, 1660-69), a magnificent series of twenty-two folio volumes, with wide margins, and many extra prints (and, in some cases, reversed prints, probably unique), of the superb engravings. Our collection of the works of Vitruvius approaches being a complete one, and numbers sixty-eight volumes, in Latin, French, Spanish, Italian, German, Dutch, and English, ranging downwards in date from the "editio princeps" of 1482-92. Again (and here I must stop with my illustrative examples of some of the more important of our books), we have, besides Alberti's "De re Edificatoria" (1512) and others of his works, his "Hecatombila," a volume which, if not very germane to architecture, is still excessively rare and almost unknown.

We are happy in possessing a considerable number of original architectural drawings, either designs, or sketches or measured drawings of existing buildings, in many cases executed by men of note, and ranging from, say, Scamozzi, in the sixteenth century, to Burges and Nesfield of our own time. The very valuable Burlington-Devonshire collection (which, thanks to the initiation of Mr. Crace, was in 1894 placed in the custody of the Institute) consists of no less than seven hundred bound volumes, and upwards of 300 miscellaneous drawings. We do not own many drawings of early date. Our oldest "Metal Work"—original sketches on both sides of one sheet, apparently the work of an artist of the fifteenth century—sheet containing drawings on both sides, which was presented to the library in 1886 by Sidney Smirke, who was the younger brother of the better known Sir Robert Smirke.

There are two drawings—exterior and interior architectural compositions—by Jacob van der Ulft (1627-1688), drawn in Indian ink, and delicately touched with wash.

A volume of drawings and sketches, presented to the library by Professor Donaldson, contains eighty drawings of scenes and altar-pieces. The date of the work is about 1713. Belonging to the Evelyn collection are five valuable sheets of drawings which, there is every reason to believe, are from the hand of Inigo Jones. Two of these represent a promenade designed, in the one case, for the masque of "Juno's Court, 1633," and in the other for the "Queen's Masque of the Islands, 1634."

In the Crace Collection of Views of Old London, in the British Museum, is a series of four prints, engraved by Loggan, 1661, representing four triumphal arches. Of these we have in the library the original drawings.

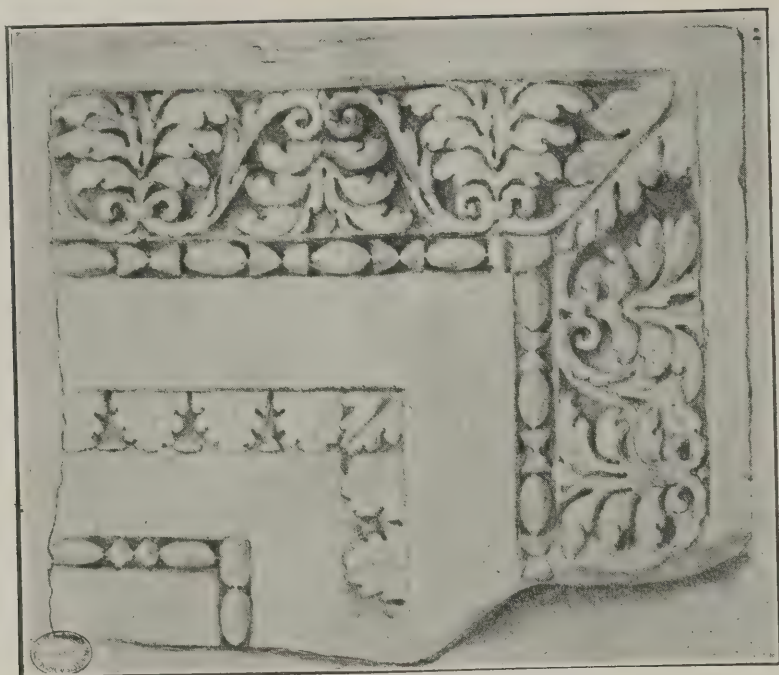
A remarkable volume consists of 120 drawings by some of those draughtsmen of the late seventeenth and early eighteenth century, who, I am afraid, come within the category of those lately described by Professor Blomfield as "in dustrious builders of 'Châteaux d'Espagne,' indefatigable and unprofitable designers in the air." The book contains sketches executed in pen-and-ink, or sepia, or Indian ink wash. We find in it some by Giuseppe Galli, probably executed between 1720 and 1730, consisting prin-

cipally of theatrical decorations and designs for scenes. There is also a pen-and-ink drawing, of about the same date, by Oppenordt, who was a pupil of Mansart and the architect, amongst other work, of the transepts of St. Sulpice. We find some good drawings of a scenic and barocco design by Panini, known as a painter of the Campagna and of Roman ruins, by whom the Institute possesses an oil painting of the Colosseum on its walls in the Council Room. By Pierre Puget, who was not only an architect, and a "great sculptor" (as he is termed by Mr. W. H. Ward), but a painter also, and was, on these three qualifications, called by his flattering admirers, in his own day, the "Michelangelo of France," there are also some examples. This "universal genius," during his stay in England, designed Walpole House, in Bloomsbury, on the site on which the British Museum now stands. By Desprè's is an important drawing in water-colour of the Celebration of High Mass, more noteworthy, perhaps, for its figures and accessories than for its architecture, and executed evidently about the middle of the seventeenth century.

John Talman, son of the elder Talman, who designed Chatsworth for the first



SKETCH FOR A FOUNTAIN BY OPPENORDT.



DETAIL DRAWING BY DECIMUS BURTON.

Duke of Devonshire, was an architect of considerable note in the early part of the eighteenth century, and, as a volume of his sketches and plans shows, designed houses for Lord Carlisle and a house for "Ye Lord Devonshire at Lambs' Conduit Fields." Before practising, he travelled to Rome with W. Kent.

A folio volume of drawings of Whitehall Palace contains the drawings made for Kent's edition of the works of Inigo Jones (1727) by Flitcroft, who was not only an accomplished and delicate draughtsman, but an architect of note in his day.

The original drawings of R. Wood's "Ruins of Palmyra" and "Ruins of Balbec or Heliopolis" are contained in two large volumes of laboriously careful sketches.

There is a volume of sketches by Chambers and Yenn, the latter of whom was Sir William's pupil, and became an architect of some distinction and an R.A. The drawings consist of "designs for fronts, projects for staircases in the grand manner, garden-houses," etc., but, being unsigned, it is not possible to ascribe the drawings to either of the two artists.

In 1784, George Hadfield received the first gold medal for the travelling studentship at the Royal Academy. He made use of his tour abroad to make measurements and collect data for the restoration of the Temple of Fortune at Palestrina, or Præneste, near Rome.

Hadfield may be further remembered as the architect of a considerable portion of the Capitol of Washington.

The library possesses the original water-colour drawings by James Stuart from which the engravings were made for Stuart and Revitt's "Antiquities of Athens," and also a small volume of his sketches and MS. notes.

There are in the library nine large drawings by Hardwick—plans, elevations, and sections of the Pantheon from his own measurements. Another large volume by him is a scrap-book in which have been mounted sketches and measured drawings, most of which he made in 1778. This conscientious, but not very inspired, book is the work of the father of the better-known Philip Hardwick. He was a pupil of Chambers, and obtained, in 1768,

the first silver medal offered at the Royal Academy for the class of architecture. J. M. W. Turner was at one time in his office.

To those who are interested in the work of the late eighteenth century, when the influence of the Adam brothers was supreme, the book of sketches of ornamental friezes from original models in the possession of Joseph Rose will appeal. The Rose family were engaged in the execution of plaster enrichments, for which they made the models from the designs of Wyatt, Stuart, and the two Adams. The drawings, 330 in number, were executed by Joseph Rose, the son, and the artist member of the firm, in 1782.

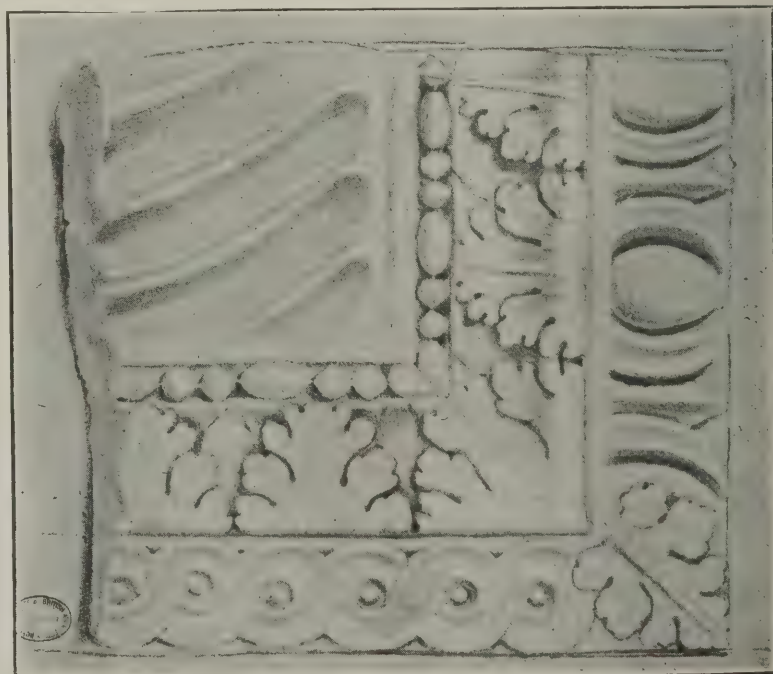
By Sir Robert Smirke (of whom we possess a bust, which is in the Common Room), we have eleven large water-colour drawings, executed during his travels in Naples, Sicily, and Greece, between 1801 and 1805.

There is a volume by Henry Parke, an architect of the early nineteenth century whose name should be known to members of the Institute as the designer of the medal which was given by his brother-architects, in 1835, to Sir John Soane, and the use of which is allowed us annually for the Soane Medallion. Parke's widow presented these 500 and 600 drawings, which are the result of his tour through Italy, Sicily, Greece, and—a somewhat rarer place to visit in his days than in ours—Egypt, in 1824. Many of his measured drawings were done in conjunction with his fellow-architect, Scoles, of whom there is a framed portrait on our walls.

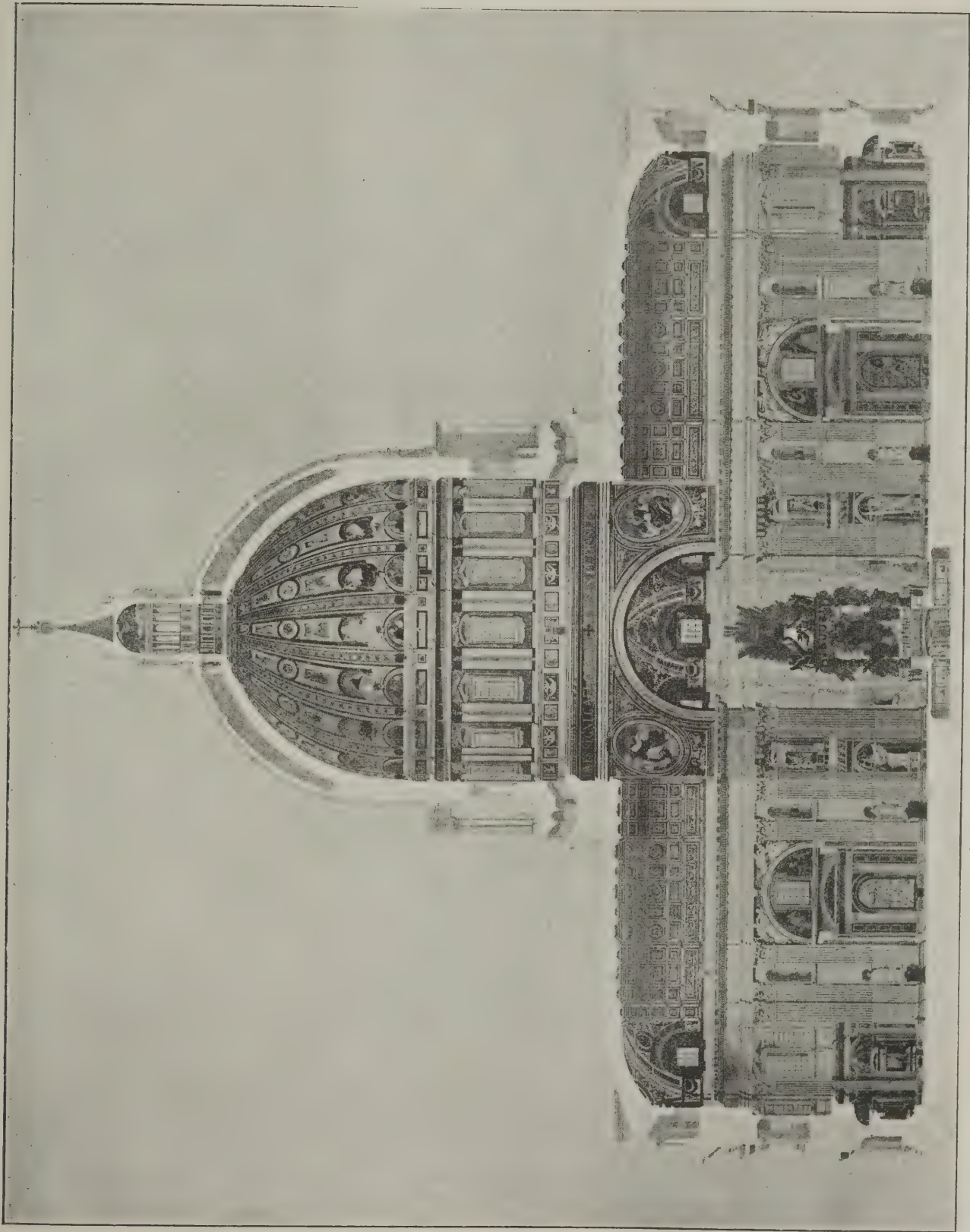
One of the original founders of the Institute was John Goldicutt, who was born in 1793, and died in 1842. By him we possess about 300 sketches, and 100 designs and projects of his own. Many of the sketches are of Pompeian decorative work, probably done for his "Specimens of Ancient Decorations from Pompeii," published in 1825.

There is a volume of strongly coloured drawings by George Wightwick (1802-1872), an extraordinarily voluminous author on things architectural. They are the originals of his "Select Views of the Roman Antiquities," lithographed by T. N. Baynes, and published in 1827, and are useful in showing us the unexcavated state of the Colosseum and the Forum. Another volume of his is a scrap-book of sketches, many of which are measured work done in Italy. We have a further volume to which Wightwick gives the somewhat imposing title of "My Liber Veritatis." It contains drawings of vases, and sketches in France and Venice, and also the rough sketches for the above work; and, finally, this most prolific of architectural draughtsmen has left behind him a huge collection of large and very vigorously coloured drawings which had served to illustrate his many lectures.

A volume presented by Professor Donaldson in 1864 contains some water-colour sketches, done between the years 1816 and 1819, by Joseph Woods, who, it is interesting to note, was a founder, in



DETAIL DRAWING BY DECIMUS BURTON.



SECTION OF ST. PETER'S, ROME, DRAWN BY J. GOLDICUTT (1793-1842).

1846, of the London Architectural Society, of which our Institute is the lineal descendant.

A curious series of sketch and note books—no fewer than sixteen volumes of closely written and minutely drawn notes—are the result of John Wolfe's three or four years of travel in Italy, Greece, and France in 1820.

Of Elmes's work, we have a large collection of drawings and designs, and full-size and other details. There are, mostly drawn by his own hand, several interesting alternative treatments of St. George's Hall, both interior and exterior. Amongst these was a rough perspective sketch—a

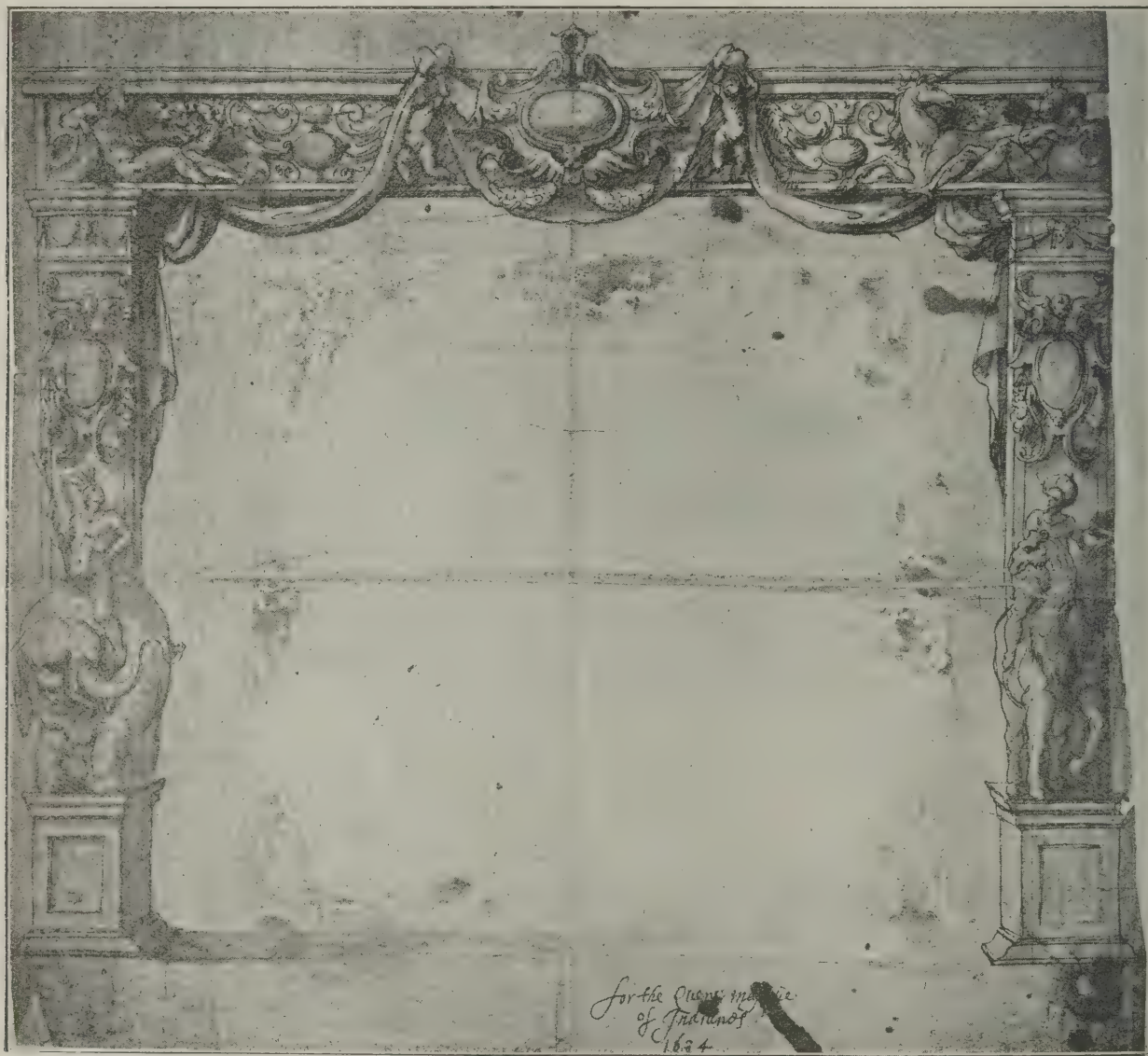
The name of T. L. Donaldson seems to carry us very far back, for, though he only died three years before Nesfield, we have two volumes of sketches done in Greece and Rome as early as 1819 and 1821. Curiously enough, one of these is a large volume of sketches of Gothic work, to which one would not have imagined he had much leaning. The list of the works of Donaldson in our library is, I think, longer than that of any other architectural author. He runs things very close with Vitruvius, the many editions of whose works I have already referred to.

A donation to the library by Mr. C. E.

well drawn, on tinted paper in black crayon touched with white.

By William Burges we have three scrap books in which have been inserted drawings of original designs of stonework, and of silver and goldsmith's work, domestic and ecclesiastic. A later acquisition, through the generosity of Sir W. Emerson, is the pocket-book lately presented by him to the Institute. It consists of thirty-six vellum pages with sketches in brown ink, annotated in Burges' usual almost black-letter script, and still contains, interestingly enough, his own crowquill.

There are four volumes of a modern architect whose influence on the architec-



DRAWING OF PROSCENIUM FOR "THE QUEEN'S MASQUE OF INDIANS," BY INIGO JONES.

facsimile of which appeared in the March issue of the "Architectural Review." I sent a tracing of this sketch to that journal, which has taken so important a part in the debate upon the proposed treatment of the south end of the building, as rather valuable evidence that Elmes himself had entertained and finally abandoned the intention of finishing each end of the podium wall with a monumental pedestal bearing a horsed figure. Amongst his drawings are three large tinted perspectives (submitted in two cases in competition), but two of these, I think, evidently show the hand of Thomas Allom, whose vogue as a "perspective colourist" was so great in the middle of the last century.

Sayer, made some three or four years ago, was a volume by Alexander Roos, a German architect who was brought by Beresford Hope to England. It contains many beautifully executed little drawings of coloured decoration. Some forty or fifty of these are of Pompeian walls and ceilings, but, unfortunately, a large proportion of the remainder are without any indication as to their source.

Decimus Burton, the architect of the Wellington Arch, and a former Vice-President of the Institute, presented to the library the year before he died (which was as recently as 1881) forty-two drawings of classic relief ornament, stone or marble, carved decoration of architraves, strings, etc. They are drawn, and

ture of our own time has, in the opinion of many, not yet been fully recognised. Some of the evidences of the amazing fertility known to many who, like myself, were brought into close contact with William Eden Nesfield, are to be found in the four volumes of his sketches which the Institute possesses.

All the drawings of R. J. Johnson's "Specimens of French Architecture," published in 1864, are contained in two of the three volumes presented by his widow, the remaining volume consisting of sketches of English Gothic work, the execution of which is not on the high level of the French sketches.

In 1867, there were presented, through Professor Donaldson, by Texier (himself

a gold-medallist of the Institute in 1866) five volumes of sketches and details, in gold and colour, of mosques in Constantinople, one volume dealing specially with St. Sophia.

The volumes of Devey's sketches are somewhat disappointing. Not indeed that they are otherwise than beautifully drawn and touched with colour in quite a charming way, but that they happen to deal principally with one branch of his sketch material only. The majority of the drawings are of chimney-tops; and though they cover a great deal of ground, and comprise notes made of these throughout England and in Germany and Holland, the volumes are not of very great interest. There are, however, a few sketches of French towns, such as Harfleur, Rouen, etc.

A collection of very beautiful drawings is contained in two volumes, one of twelve sheets and the other of thirty-three, of the coloured decorations of Norfolk and Suffolk churches. The larger volume deals with the well-known series of screens, and the smaller containing principally roof decoration. These drawings, which were executed by G. Y. Wardle, with very charming feeling for his subjects, show a delicate and an accurate appreciation of the work of that great school of English art of the early sixteenth century which has not yet received its meed of recognition.

DISCUSSION.

Mr. R. Phene Spiers, proposing a vote of thanks, said a large number of drawings had been shown on the screen, only a few of which he knew the existence of in the Institute collection. Schute's book, he said, was published in 1563, and further editions appeared in 1576 and 1584. Now that we had established a School at Rome, it was of interest to recall that Hardwick's book contained measured drawings of the Villa Hadrian, prepared in 1777; but the most interesting drawings were those by George Hadfield, who was a travelling student in 1790, and who provided the only instance of a student doing a series of drawings in the manner of the modern Grand Prix students who went to Rome. A description of all Nesfield's drawings, he continued, appeared in the *Institute Journal* for 1895. Mr. Spiers recalled how Nesfield delighted to spend his time in the Houses of Parliament making sketches of Pugin's work there. Referring to Mr. Townsend's remarks with respect to possible competition in the acquisition of drawings between the Institute and South Kensington, Mr. Spiers said he had sent about 1,400 drawings to South Kensington simply because the necessary accommodation was not available at the Institute. At South Kensington they were catalogued and made accessible to students.

Mr. E. F. Strange, Assistant Keeper, Victoria and Albert Museum, seconding the vote of thanks, said that only last year they acquired some drawings by John Yenn. Yenn designed a large amount of furniture, among other things, and was also responsible for much of the decoration that was attributed to better-known names. With regard to the drawings of East Anglian rood screens, by Wardle, at South Kensington, they had a considerable number of drawings of the same subjects which were commissioned in 1865-1867. Apparently Wardle had exceeded the commission, and the additional drawings were those in the Institute collection. All the drawings at South Kensington, he continued,

were catalogued and topographically indexed, so they were able to do more for the Institute than they could do for themselves.

Mr. Rudolph Dircks having commented on some of the contents of the Library,

Mr. W. H. Ward said there were many gaps in the Library which required filling in. Columbia University, New York, had been known to spend £1,000 in one year upon the acquisition of books; the Institute of Civil Engineers spent £600 annually, half of that sum being absorbed in binding; but the Institute spent only £150, of which £40 or more had to go in binding, part of the remainder being put towards the Loan Library. If they could only have £30 or £40 allocated annually for the purchase of duplicate books for the Loan Library, and a clear £150, apart from binding, for the Reference Library, he thought the Institute would be in a much better position.

Mr. Herbert Baisford suggested that since Mr. Townsend had confined himself to the Institute's collection of drawings, it would be interesting to have at some future date, perhaps by Mr. Dircks, a paper dealing exclusively with the books themselves.

Mr. E. Guy Dawber, who was in the chair, summed up the discussion, observing that when the finances were on a better footing he hoped they would be able to increase the Library allowance.

Mr. Townsend, in reply, said that with respect to the Wardle drawings, those in the Institute collection were manifestly tracings—perhaps of those at South Kensington—and it would be interesting to compare the two sets.

Mr. Phene Spiers then presented the Institute with some drawings by the late Sir Henry Layard.

TOWN PLANNING CONFERENCE OF LOCAL AUTHORITIES.

About 200 representatives of town and district councils in the southern area of England and Wales met at the Westminster Palace Hotel on April 25th, for a two days' conference to discuss details of town-planning administration. Mr. W. Thompson, chairman of the National Housing and Town Planning Council, presided over the conference.

There were no set speeches, and though many useful papers had been prepared, these were not read. It was felt that information could best be imparted by question and answer, and in this way a great variety of useful experience was exchanged by representatives of authorities who are at present engaged in putting the Act into force.

The question was raised whether existing parks and recreation grounds should be included in town-planning schemes. At Sutton Coldfield a 24-acre park was excluded, but a Carshalton recreation ground was included on the ground that it might, at a future date, be required for workmen's dwellings or some other purpose. In reply to a question whether Crown lands should be included, Mr. Ward, of Portsmouth, stated that the War Office absolutely refused to allow an area of their land to be scheduled in the town plan, though it was being sold and developed as a building estate. The Chairman said this was a case of which public notice should be taken. There was no reason why a Government depart-

ment should be exempted any more than a municipality.

The question of the relaxation of by-laws in order to allow residential areas to be developed on garden city lines produced an animated discussion. Several representatives declared that councils had no power to modify their by-laws, but it was stated that this was done at Southgate and Ruislip, and Mr. Merton, or Rugby, said that in their case the Local Government Board sanctioned the exemption of a defined area from the operation of certain of the model by-laws. The Chairman also stated that the Board had approved of a by-law which allowed modified roads on Mr. Reckitt's garden village at Hull. Mr. Reay Nadin, of Sutton Coldfield, and Mr. H. R. Aldridge, the conference secretary, urged that it would be a fatal policy to relax road-widths and the conditions of road construction by by-law, as this would encourage owners to develop outside the town-planning schemes, and thus prevent the authorities from imposing conditions respecting buildings and the number of houses per acre. Great divergence of opinion was shown in a discussion of the question of the types of roads suitable for town-planning areas. Many members were opposed to the methods of road construction practised on garden suburbs, with grass verges, gravelled paths, and lightly metalled roadways, but this type of roads was defended as lending picturesqueness to residential areas. It was pointed out by the chairman, however, that the object of such cheaper methods of construction was to recompense owners for the restrictions placed upon them by the limitation of the number of houses per acre and the provision of open spaces. If the cost of development were not thus cheapened owners would withhold their consent. The essence of town planning, he said, was to get sunlight, fresh air, and vegetation round the dwellings, and they must take great care not to make the conditions too ideal, or the working-man would be unable to pay the cottage rents.

Mr. Raymond Unwin, architect of the Hampstead Garden Suburb, recommended roads for residential parts of a town-planning area with a width of 16 ft. Some of their 20 ft. roads at Hampstead cost 1½d. per foot for maintenance, whereas 40 ft. roads cost at least 6d. Mr. W. Cullis, of Ilford, and other speakers, contended that the best and most expensive road was the most economical in the long run; but it was pointed out that the roads under consideration were not arterial or business roads, but small residential roads and *culs-de-sac* for an attenuated population.

A resolution was passed requesting the Local Government Board to consider the advisability of dispensing with the service of personal notices on landowners affected by town-planning schemes beyond article I. of the regulations, and of requiring all subsequent notices to be by public advertisement only.

"A.A. Smoker," and Exhibition.

A members' smoking concert and exhibition of half-inch scale drawings and photographs of recently executed work will be held at 18, Tufton Street, Westminster, on May 3rd. The exhibition will be opened by the President, Mr. Gerald C. Horsley, F.R.I.B.A., at 7.30 p.m., and the concert will commence at 8.30 p.m. The exhibition will remain open until May 11th.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief, and to write on one side only of the paper.

*The R.I.B.A. and Registration.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIR,—In reference to the letter from the Institute Members' Club which appeared in the Journal of the R.I.B.A. for April 13th, we should like to point out that the question of Registration with which it deals is one so profoundly affecting the welfare of the profession that it should not be allowed to die through the apathy or indifference of the responsible guardians of the trust and obligations imposed upon them by the general body of the Institute. Nobody regrets more than ourselves the futile efforts made by the R.I.B.A. to deal successfully with a great problem which is of vital interest to every practising architect. These futile efforts were the result of an adoption of a foolish compromise which satisfied neither side, and subsequent events have shown that the compact made five years ago was an unworkable one. In these circumstances we now feel free to take an independent course, and definitely and finally to throw over our allegiance to the policy of compromise then forced upon us, with which we have never pretended to be really in sympathy.

We consider that the R.I.B.A. scheme, even with any considerable modification of its details, could never become law; for it is ludicrous to suppose that any Government would permit the Institute to become the sole examining body for granting diplomas or allow it to have sole jurisdiction over the profession of which it forms so small a part. For instance, the University of Cambridge has inaugurated a School of Architecture and instituted examinations on a higher and more comprehensive scale than those of the Institute. Is it likely that this ancient seat of learning, one of the two oldest educational centres in the kingdom, with its two parliamentary representatives, would submit for one moment to the proposed dictatorship of the Institute?

Again, is it reasonable to assume that the University of Oxford, which will probably follow the sister University in founding a course of study in architecture, with its prestige, power, and influence behind it, will stultify a more than probable future educational extension by passively submitting to the philandering scheme of the Institute?

Surely, having regard to the fact that the policy of the R.I.B.A. is bound to bring about the active opposition of the distinguished parliamentary representatives of these universities, whose views on educational questions would be likely to be accepted by Parliament almost without question, there would be no chance of the Institute's Bill becoming law, unless the equitable recognition of these and other educational bodies were freely accorded.

As a melancholy example of the short-sighted policy of the Board of Architectural Education, whose action was subsequently confirmed by the Council, we may quote the case of Cambridge University.

Certain Universities of recent formation, and without parliamentary representatives, which have adopted the R.I.B.A. regulations in regard to architectural study, were regarded as "recognised schools," and, as such, obtained certain privileges—that is, exemption

from the Intermediate Examination, etc., whereas Cambridge, with a higher standard of education and powerful influence in both houses, was not accorded a similar exemption. The absurdity of this exclusion is more apparent when certain other facts are taken into consideration, such as the privileges accorded to Liverpool and Manchester, which were granted because these universities taught "design," whereas Cambridge does not pretend to do so.

The reason for excluding Cambridge is not quite clear, inasmuch as "design" is only an optional subject in the Intermediate Examination, and the confusion of ideas becomes absolutely chaotic when it is remembered that the leading opponents to Registration have declared over and over again that "design" cannot be taught, and therefore we should have thought could not become a subject for examination.

However, the question of education is one of far too serious a nature to be allowed to be treated thus lightly and illogically, consequently as a preliminary proceeding we think the Institute would be well advised to approach the older universities on the subject of architectural education in a far more friendly and conciliatory spirit than it has yet shown, with a view to enlisting their guidance and support. Further, it is folly for the Institute to imagine that it has the remotest chance of securing Parliamentary recognition for its members without due assurance that its proposals will not encounter active opposition of the Surveyors' and Engineers' Institutes, to say nothing of the many borough and county councils, all of which bodies will assuredly have to be placated.

In short, the Institute must remember that it is acting for the welfare of a large profession, of which it forms only a part, and not for the individual glorification of its members.

There is much spade-work to be done by the Institute before any Bill can be drafted; and if the R.I.B.A. would condescend to set about this preliminary work instead of forming itself into Committees to draft Bills which have no earthly chance of ever becoming the law of the land, the Council would be embarking on a course of profitable work. The continuance of its policy of spending its time, and irritating its more serious members, in futile efforts to obtain parliamentary recognition without first preparing the ground, seems to us to be nothing more nor less than trifling with a stupendous problem which has yet to be solved.

A. W. S. CROSS.

GEORGE HUBBARD.

Verona, April 21st.

*What to Do with the Crystal Palace.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIR,—I was glad to read the interesting leading article in your issue for April 17th on what might be done with the Crystal Palace, and particularly to see that you regard the proposal to utilise it and its grounds for the purposes of an open-air folk-museum as "the most definite proposal before the public." Some of your remarks, however, suggest that you do not fully appreciate the character which we who have made this proposal aim at giving to such an open-air folk-museum.

With your central idea that the Crystal Palace and its grounds should be made into a place of beauty, and with your belief that, if this be done, people will

again be attracted thither, I heartily concur. That, however, is precisely what we are aiming at, and your suggestion that the folk-museum might be secreted "in some part of the ground set apart for it, so as not to interfere with the general character" of the grounds "as a pleasure-ground" will come with no little shock to those who are familiar with open-air museums in other parts of the world. So far as the usual indoor museums in towns are concerned, you doubtless are quite correct in saying that people go there "when the weather is uninviting for outdoor enjoyment," but with the open-air museum as it exists in the three Scandinavian countries quite the contrary is the case. The enormous crowds who visit these museums on all days of public holiday certainly do not go with the object of studying any abstruse question of folk-lore; they go because they will see beautiful objects in beautiful surroundings, and they find the beauty no less because something of human interest is superadded to it.

To make the Crystal Palace "a palace of pleasure", and to provide for its visitors "pure enjoyment" is a worthy ambition, and has my hearty sympathy, but I would suggest that the highest pleasure and the purest enjoyment do after all demand some intellectual substratum. Curiously enough, I myself happen to have formed one of the crowd at Hampton Court on the day you mention, and I am quite sure, both from this and from many a previous experience, that a very large number of those who go there to enjoy the beauty of the flowers combine with the purely sensuous enjoyment an intelligent interest. To judge from the scraps of conversation one over hears, a large percentage of the visitors are themselves horticulturists in a small way. So, too, the visitors to the open-air museum of Skansen at Stockholm do not find their sense of its remarkable beauty impaired because it is intertwined with memories of the past, strikes back to the foundation of national art, and presents in a small compass the surroundings that have nurtured so many of Sweden's unforgotten dead.

In this country we should aim at the same high ideals, and I do not share your doubts that fitting architectural material would be forthcoming. But our scheme, as you are aware, extends far beyond this; it includes the preservation of all the arts and crafts and pastimes that truly belong to the nations of the United Kingdom. Our scheme, while retaining much with which the Crystal Palace is already associated, will have in addition that which, as you rightly say, the Palace lacks—a central idea; and this idea is one that should commend itself to every Briton at home and beyond the seas.

F. A. BATHER.

British Museum.

Instruction in Structural Mechanics.

A course of instruction in this subject is being given at the London County Council School of Arts and Crafts, Southampton Row, W.C., on Thursday evenings from 7 to 9.30 p.m., by Mr. Percy J. Waldram, F.S.I. This course has been specially designed in preparation for the entrance examination, intermediate and final, of the Royal Institute of British Architects; the board of Architectural Education of the Royal Institute having called attention to the necessity for more thorough knowledge of the subject of structural mechanics on the part of those seeking admission to the Institute.

THE COST OF BUILDING LABOUR.*

BY R. M. KEARNS, F.S.I.

One of the chief difficulties encountered by the quantity surveyor when preparing a schedule of prices for measured work, or an estimate priced in detail of the cost of a proposed new building, is that of making a just allowance for labour. It is with this difficulty that the present paper mainly deals.

LOOKING at a table of wages rates in the building industry throughout the kingdom, the author could not help feeling astonished at the low rates obtaining at the present time in some of the country towns and throughout Ireland; for on studying the figures it is found that, as a rule, the number of hours worked is greater in those localities where the lowest rates are paid.

As to the number of hours worked in summer and winter, the author thought that, for all practical purposes in connection with estimating, the following figures are sufficient:—

	Average number of hours worked per week per man. Summer. Winter (12 wks).	
London (all trades, excluding overtime) ..	50	45
Country (all trades, excluding overtime) ..	55	50

The following rates, the author said, are paid in London in connection with reinforced concrete work: Labourers 7d. per hour (a few at 7½d.); gangers—one to about thirty labourers—9d. to 10d. per hour; smiths, 10d.; carpenters erecting casings and centerings, 10½d.; and foremen carpenters, 1s. to 1s. 3d. per hour.

Lump-sum Contracts.

Building contractors and their foremen are splendid organisers and controllers

	Total Cost.	Cost of Labour shown in percentages of the Total Cost of the Building.
A.—Lump-sum contract for the erection of an ordinary brick building with stone dressings. Estimate based on carefully prepared Bills of Quantities and tendered in competition	£9,500	
Extras ..	£700	
Omissions ..	£200	
Net cost of Variations ..	£500	
	£10,000	(say) 40
B.—A similar building, measured in the course of erection, and valued on a Schedule of Competitive Prices. (There is usually more day work allowed in this form of Contract than in Form A) ..	£12,000	45 to 50
C.—A similar building, erected entirely as day work, all materials and labour being paid for in accordance with weekly vouchers. Labour rates and the prices of the principal items of materials embodied in the Contract ..	£15,000	55 to 60

*Extracts from a paper read at the Ordinary General Meeting of The Surveyors' Institution.

of labour; consequently the cost of erecting a building is reduced as nearly as possible to the minimum in the case of the lump-sum contract. The author referred, of course, to a contract based on an estimated amount of the cost of all labour and materials, such amount having being tendered in a bona-fide competition. On the other hand, the cost of erecting a building approaches the maximum when labour and materials are paid for as day work.

The table at foot of the first column will show at a glance the advantages of the lump-sum contract, and the approximate percentage of the cost of labour.

It will be noticed that the percentage of the cost of labour increases with the introduction of day work. Under Contract "A" the building owner receives the full benefit of the organising and energising abilities of the contractor. In the case, however, of Contract 'C,' it is not to the contractor's immediate advantage to push forward the work with the utmost vigour unless he is anxious to remove his plant. As a matter of fact, the longer the workmen are employed in day-work, and the greater their number, the larger is the contractor's profit, seeing that he receives a premium varying from about 3 to 15 per cent. on all wages paid in that connection. The table is, of course, theoretical, but the author was convinced that the figures could be supported by general experience.

A salient point in connection with the lump-sum contract is that the contractor, in the absence of any special arrangement to the contrary, stands to gain or lose on the amount of his estimate, no matter what fluctuations may take place in the wages rates of the workmen. In equity, however—putting aside the question as to what should happen in the case of a decrease—it would appear that some allowance should be made to the contractor when he is compelled to make a rise in wages under the force of circumstances which could not be foreseen before the date of his tender. This allowance would have to be arrived at by ascertaining in the first place the value of the measured work executed after the rise in wages takes effect, and then adding a percentage on the proportion of the cost of labour, differentiating between mechanics and labourers.

Proportionate Value of Labour and Materials.

In this matter every contract should

Trade.	Approximate Proportion of the Cost of Materials and Plant.	Approximate Proportion of the Cost of Labour.	
		Mechanics.	Labourers
	per cent.	per cent.	per cent.
Bricklayer ..	67	24	9
Mason ..	40	55	5
Slater ..	80	15	5
Carpenter ..	70	27	3
Joiner ..	37	62	1
Smith ..	80	15	5
Plumber ..	75	16	9
Plasterer ..	45	41	14
Glazier ..	85	15	—
Painter ..	40	56	4

of course be dealt with on its own merits, as the proportionate value of labour to materials and plant varies in each trade according to the nature of the materials and the architect's designs. The proportions shown at foot of second column might apply to ordinary public buildings or first-class residences.

Reinforced-concrete Construction.

In reinforced-concrete buildings the cost of labour is something between 50 and 60 per cent. of the total cost of the structural work, as compared with an approximate 40 per cent. in the case of ordinary brick and stone buildings. There is very little difference between the cost of the finished reinforced concrete and that of brickwork, bulk for bulk; and the great saving effected by building in reinforced concrete is, of course, due to the extraordinary thinness which is permissible in walls, piers, etc.

Fair Wages Clause.

As to the responsibility for the payment of fair wages, I may refer here to a circular which was issued to various Councils in September last by the Local Government Board, setting forth the clauses recommended for general use in Government contracts by the Fair Wages Advisory Committee. Quoting from the circular: "It appears to the Board that the policy adopted in the case of Government contracts should be followed in the cases of all contracts for the execution of works, or the supply of materials, which are entered into by Local Authorities, or by or on behalf of any committee wholly or in part appointed by a Local Authority. Whilst they are aware that many Local Authorities specify in their contracts conditions to be observed by the contractor as to rates of wages and other matters affecting persons employed by him, the Board think that in every case the Authority should give the matter careful consideration, with the view to the introduction in the contracts of clauses on the lines of those inserted in Government contracts."

Of the clauses referred to, the following is the most important:—

"The contractors shall in the execution of this contract observe and fulfil the obligations upon contractors specified in the Resolution passed by the House of Commons on the 10th March, 1909—namely, 'The contractor shall . . . pay rates of wages and observe hours of labour not less favourable than those commonly recognised by employers and trade societies (or in the absence of such recognised wages and hours those which in practice prevail amongst good employers) in the trade in the district where the work is carried out. Where there are no such wages and hours recognised or prevailing in the district, those recognised or prevailing in the nearest district in which the general industrial circumstances are similar shall be adopted. Further, the conditions of employment generally accepted in the district in the trade concerned shall be taken into account in considering how far the terms of the Fair Wages Clauses are being observed. The contractor shall be prohibited from transferring or assigning directly or indirectly to any person or persons whatever any portion of his contract without the written permission of the Department. Subletting, other than that which may be customary in the trade concerned, shall be prohibited. The contractor shall be responsible for the observance of the Fair Wages Clauses by the sub-contractor.'"

Schedule of Labour Rates.

A schedule of labour rates should be attached to every form of contract, the rates named being those which must be actually paid by the contractor. In the case of a lump-sum contract the schedule of labour rates to be allowed to the contractor for labour in day work on extra works should contain a clause of the following description :—" The above rates are those which are understood to be the standard rates of wages appertaining to the various trades in , and to be actually paid to the men employed. An allowance of per cent. will be made to the contractor upon the actual rates paid to the men, to cover profit, superintendence, and the use of all tools, sharps, scaffolding, etc. In the event of any changes being made in the wages of the workmen during the continuance of the contract, corresponding changes will be made in these rates."

In many cases the rates can be verified by applying to the Master Builders' Federation or to the surveyor to the local authority of the district concerned.

The following comparative statement (taken from *London Statistics*, vol. xxi., issued by the London County Council) shows the weekly wages and hours of labour in certain trades in London, Paris, Berlin, and Brussels :—

TRADE.	LONDON (1906).		PARIS (1905).		BERLIN (1905).		BRUSSELS (1908).	
	Wages. per week.	Hours per week.	Wages per week.	Hours per week.	Wages per week.	Hours per week.	Wages per week.	Hours per week.
Bricklayers	43/9	50	38/5	60	39/1	53½	23/9—27/7	66—69
Carpenters	43/9	50	43/2	60	39/1	53½	25/4—28/8	66—69
Joiners	43/9	50	38/5	60	31/11	52	23/9—29/0	66—69
Plumbers	45/10	50	38/5	54	32/1	53½	23/9—27/7	66—69
Painters	35/5—37/6	50	33/5	60	26/9—29/5	53½	21/1—24/10	66—69
Labourers (Bricklayers') ..	29/2	50	24/0	60	25/8	53½	18/6—19/4	66—69
Turners	39/0	48—54	33/7	60	37/3—38/10	57—10	21/11—26/9	56—60
Fitters	39/0	48—54	33/7	60	30/0—33/0	57—60	20/4—23/7	56—60
Smiths	39/0—48/0	48—54	33/7—40/10	60	30/0—31/2	57—60	22/—26/56	56—60

Works of Maintenance.

In a properly conducted maintenance contract the expenditure incurred over several years should show the cost of measured work and day work in something like the following proportions :—

Measured work, covering materials and all labour	65 per cent. of the total expenditure.
Day work (in jobbing repairs)	Labour 25 per cent. of the total expenditure. Materials 10 per cent. of the total expenditure.

Here again my mission is to point out that day work, although inevitable, should be restricted as much as possible, and in no instance should the cost be allowed to exceed 50 per cent. of the average annual expenditure. A case was recently brought to my notice in which various works of maintenance were carried out for a certain department under a schedule at a cost of about £4,400, and of this total the day work charges did not amount to 5 per cent. No doubt this is an unusually low percentage, but it shows what may be done under proper management.

Measured Work and Day Work.

It is obvious that in measured work which is paid for at schedule prices covering the cost of all materials and labour, the contractor's foreman, if he wants to

show a profit, must hustle the workmen and contrive to finish the job at the least possible cost to his employer. The desire to do everything as day work can therefore be understood. Day work calls for no measuring on the part of the surveyor, and ensures peace and quietness for both sides, the employers and employed. The only drawback is the extra cost. Experience proves, however, that this extra cost is a serious item; indeed, it may be taken as a well-attested fact that decorative works, repairs and alterations, connected with a maintenance contract, cost from 50 to 100 per cent. more if executed as day work instead of measured work. I am told, however, that it is possible to get work executed as cheaply by day work as by measured work; and I admit that it is possible, but only if the day work were performed by a picked group of conscientious men, properly supervised, and that the prices for "materials" were in correct proportion to the prices for "materials and labour in fixing." The possibility is, however, somewhat remote, especially in connection with large contracts carried out for public bodies; for it is well known that men do not work so strenuously for the latter as for private individuals. The work of supervision, after all, is the secret

is widely out of proportion to the amount of materials supplied, there is need for investigation.

(2) When examining the weekly vouchers, note the names of the workmen and the total number of hours charged per day in respect of each man. In this connection see that no more men are employed than the proper number required to do the work, foremen being apt to crowd workmen on to day work. In the absence of special arrangements, any claims in respect of contractor's foremen should be disallowed, except in cases where the foremen actually work as mechanics.

(3) See that the materials charged for are not in excess of what was required for the work. For instance, in setting ranges requiring a supply of, say, 50 bricks, a surveyor would be quick to make an adjustment if 500 bricks were charged for in error. Again, in plumber's work the quantity of solder charged for should bear a reasonable proportion to the soldered joints, etc., found in the work.

(4) See that there are no items in the day work accounts which are also charged for in the measured work accounts. In large contracts such items may often be found. They creep in, to put it generously more by accident than design. Stone, landings or sills, joists, floor-boarding,

of economy in all building operations so far as labour is concerned.

Examination of Contractors' Accounts.

The proper examination of the contractors' accounts is highly necessary if the expenditure on works of maintenance carried out for public bodies is to be controlled and kept within the required limits. For instance, the examination of day work accounts should not be relegated to a man with no more professional experience than that of an office boy or pupil, but should be examined, in conjunction with the measured work accounts, by a surveyor of ripe experience and possessing the highest technical qualifications. Further, in all cases where works are carried out partly as "measured" and partly as "day work," the whole of the accounts should be checked, or at least carefully scrutinised by the surveyor who has been entrusted with the "measuring up" and who has gained in the process of measuring a full knowledge of the work as actually executed.

Efficient examination will reduce expenditure, while inefficient examination, which is always quickly recognised by the contractors, will increase it.

For the benefit of some of the junior members of the profession, I venture to name the following rules which should be borne in mind when examining day work accounts :—

(1) Watch the proportion of charges for labour and materials. In the labour

slate-shelving, glass, and other items, which, according to particular circumstances may be passed either in day work or measured work accounts, are sometimes claimed in both. "Labour in fixing" and "preparatory labours" in decorative work, may also be found to be charged for in duplicate. On one occasion, when examining accounts for decorative work I found that the amount of labour charged for as day work under the heading of "repairing and bringing forward at damaged places, etc," was, according to a liberal estimate, sufficient to do the whole of the preparatory and finishing work which was charged for in the "measured" account. In this case only a small quantity of day work should have been charged for in respect of repairs.

(5) See that ample descriptions of the work done by the different men employed in day work are given on the weekly vouchers.

(6) Obtain separate vouchers and accounts in connection with all special works, in order that the cost may be compared with the estimated amounts.

(7) In checking the prices of items which are not in the schedule, do not be influenced by "sporting charges." For instance, if 1s. per ft. run or super. is a reasonable or "pro rata" charge, do not pass 3s. per ft. in the event of the contractor having charged 5s. To allow more than 1s. per ft. in a case like this would display weakness and incompetence.

Although in following such rules as the foregoing the total amount of any particular batch of accounts may not be reduced to any large extent, the moral force of the surveyor's queries and investigations would be very far-reaching, and of inestimable value to his employers.

Bearing an important connection with the cost of labour, it should be noted that under clauses already referred to in the case of the erection of a new building, the maintenance contractor should take all risks and responsibilities in regard to damage to property or injuries to workmen in connection with "measured" or "day work"; and also undertake to pay "such wages as are generally accepted as current in each trade for competent workmen."

The actual labour rates paid should be shown on all day work vouchers on which, as before described, a percentage should be allowed to the contractor, covering profit, superintendence, and the use of all tools, sharps, scaffolding, plant, etc. This system is preferable to that in which the rates shown on the vouchers and bills are inclusive of profit, and furnish no direct evidence as to the amounts actually paid to the different workmen.

The following are the current rates paid to non-building workmen employed in connection with the maintenance of buildings in London:—

	Rate per hour actually paid to the workmen, so far as can be ascertained.
Faviours	8½d. to 10d.
Rammermen	8d.
Engineers or Fitters attending to heating, ventilating, and cooking apparatus, and to fire-extinguishing apparatus	8½d. to 10½d.
Assistants do. do. ..	6d. to 7d.
Stokers	7d. to 9d.
Engineers attending to lifts ..	8½d. to 10½d.
Assistants do. do. ..	6d. to 7½d.
Electricians attending to electric bells, etc.	9½d.
Electric fitters and wiremen ..	9d. to 9½d.
Wiremen's labourers	7d. to 7½d.

The complex functions of the engineering trades are beyond the scope of his paper, and I can merely express the opinion that money is well spent in the payment of good wages in order to secure thoroughly reliable men in connection with the heating and lighting of any large blocks of buildings. The duties all for the exercise of much special skill and zeal. A really good stoker, for example, will economise in fuel and yet obtain the required heating power from his furnace. Details as to working hours, overtime, out-door allowances, etc., will be found in the "By-laws and regulations" of the Amalgamated Society of Engineers, 110, Peckham Road, S.E., and the "National Agreement as to Working Rules and Conditions," issued by the National Association of Master Heating and Domestic Engineers, 12, Great James Street, Bedford Row, W.C. Particulars as to the working rules, etc., of the electrical trades may be obtained from the head office of the Electrical Trades Union, 26, Cannon Street, Manchester, and from the Electrical Contractors' Association, 20, Bucklersbury, E.C.

Labour Efficiency.

In no way is the cost of labour affected much as by the efficiency or inefficiency of the workmen. While there are plenty of efficient men to meet all ordinary requirements, it seems to be the fact that a percentage of inefficient men in the

labour market is steadily increasing. This is no doubt largely due to the gradual collapse of the old-fashioned system of apprenticeship, and to the ease with which men can get enrolled as craftsmen in some of the trade unions.

The London County Council has for many years been taking an important part in promoting the efficiency of workmen. Schools of building have been established in Brixton and Dalston Lane which promise to be of great benefit to young men, as they can there receive practical teaching under somewhat similar conditions to those met with on buildings or in builders' shops. I have seen it stated, however, that a large percentage of the students who attend these classes do not eventually enter the building trades, but become clerks. If the statement be true, all one can say is that these clerks will be none the worse for possessing some technical knowledge, if it be only of tools, and the method of using them.

Overtime.

Overtime is well known to be detrimental to the health and energy of workmen, and whether in connection with measured or day work should only be countenanced in cases of most exceptional urgency. It is an expensive form of labour on account of the difficulty and extra cost involved in supervision, and by reason of the fact that the workmen's wages rates are increased from 25 to 100 per cent., according to a scale, in respect of the hours worked after the ordinary leaving-off time. Where the work has to be continued day and night the trade unions prefer that night gangs should be employed. This arrangement is a great improvement on the overtime system, although it does not dispose of the difficulties as to supervision. It should be noted that mechanics and labourers employed in night gangs received 1d. per hour and painters 2d. per hour in addition to the ordinary rates of wages.

Piecework.

With reference to piecework it is generally found that when men are engaged on such work they can earn more than they would receive for labour paid for at the trade union or current rates of the district; and as a rule good and expeditious work is done, the men having reason to be satisfied with the payment they receive for it. Piece-work, however, is injurious to the health of workmen.

CONCRETE WITH TIMBER REINFORCEMENT.

In a paper on "Ligno-concrete," read before the Society of Engineers, Mr. Gerald O. Case described some investigations undertaken with the object of ascertaining whether it was possible to reinforce concrete with timber rods.

The paper described experiments made to ascertain (a) the amount of water absorbed by 18 kinds of timber immersed in fresh water, along the grain and through the end grain respectively; (b) the relative absorption by the timber of fresh and sea water in the same period; (c) the relative amount of water absorbed by timber embedded in 6 to 1 concrete and neat cement blocks; (d) the effect of applying wood preservative, creosote, varnish, etc., to the timber before insertion in the concrete or cement blocks; (e) the effect on the adhesion between the timber and the concrete of soaking the rods before insertion. Examples were

given to show that concrete effectively preserved timber embedded in it.

During 1910 tests were made of a number of ligno-concrete and plain concrete beams 4½ by 4½ by 55 in. long at the Brighton Municipal Technical College. The beams were made on the cliffs at Rottingdean in timber moulds, four being made at a time from the same gauging of concrete, which was composed of one part granite chips, ½ part fine sand and ½ part coarse sea sand, and ½ part cement. For some of the beams fine beach sand was used instead of granite chips. The reinforcing rods had a number of nails driven into the wood which projected ½ in. The reinforcing frames with the exception of one made with teak rods were soaked in water for two or three days before being put into the concrete, and the beams were all loaded in the centre. The span was 42 in. The load which produced the first crack in a beam reinforced with ¾ in. jarrah rods was 850 lb., and the maximum load at which the rods broke was 3,300 lb.; with tallow-wood rods these figures were 1,050 lb. and 3,150 lb., while in the case of rods made of teak, deal, oak, ash, and mahogany the figures ranged from 1,400 lb. to 1,000 lb. and from 2,500 lb. to 1,595 lb. respectively. The age of the beams varied from six to 14 days.

Twelve ligno-concrete beams, 8 in. deep by 4 in. wide and 4 ft. 6 in. long, reinforced with oak and yellow deal rods, and one plain concrete beam, were tested for the author by Professor C. A. M. Smith, of East London College. The beams were made with concrete of the proportions used for the small beams. They were loaded in the centre, the span being 4 ft., and readings were taken on the deflection of the beam for each load, the load being then removed, and the amount of permanent set noted. The beams reinforced with oak took an ultimate load of 1 to 1.4 ton at the centre; the load at yield point was 0.42 to 0.40 ton, and the deflection at that point was 0.005 to 0.024 in. In the case of the deal reinforcement the figures were 1.2 to 2.0 tons, and 0.6 to 0.7 ton, and 0.01 to 0.017 ton respectively. The age of the beams ranged from 62 to 120 days.

In the author's opinion, ligno-concrete could not compete with ferro-concrete for purposes where more than about 1.2 per cent. of steel reinforcement was required, because the size of the timber would be too large for convenient use, but he thought that there was a large field for it in the construction of bungalows, buildings for small holdings, floors, piles, posts, fencing, coast and river work, etc. It had already been used for making fence posts from the author's designs. The cost worked out at about 2.1s. per foot cube, or about 20 per cent. cheaper than creosoted yellow deal and 40 per cent. cheaper than English oak. In Canada, as a result of the author's investigations, the Pacific Coast Construction Company of Victoria, British Columbia, had formed a special ligno-concrete department, and had made a large number of slabs for houses. They had built four houses, and at the present time had contracts in hand for over 20 others of the bungalow type, all of which were to be built with ligno-concrete slabs. The slabs were made to a standard size, 8 ft. by 2 ft. by 3 in., or 1½ in. thick. If they were made 1½ in. thick, two of them were used to form a hollow wall. No slabs had shown the slightest signs of cracking, although they were transported by rail three weeks after they had been cast.

NEWS ITEMS.

Birmingham Blue Coat School.

As the Governors have decided to seek a more suitable site for this school, architects taking part in this competition have been advised not to proceed with the drawings until further notice.

A Convalescent Home.

A convalescent home for women at Swithland, Leicestershire, which has been recently completed and opened, has been erected at a cost of £17,000. Messrs. Seale and Riley are the architects.

Plasterwork and Interior Decoration in the Students' Union, Liverpool.

Professor Reilly, of the Liverpool School of Architecture, has placed with Messrs. John Tanner and Son, of Liverpool and London, the whole of the fibrous plaster and "Ferrocon" imitation stone work for the new Gilmour Hall in the Students' Union, Liverpool, to be carried out in the Neo-Grec style of the interior.

The Windsor Memorial to King Edward.

The Windsor Memorial to King Edward, which was unveiled by Prince Christian on behalf of his Majesty on Monday, consists of a bronze statue of the late King, standing on a stone pedestal with bronze decorations. At the four corners are allegorical figures in bronze holding shields. The statue has been executed by Countess Feodora Gleichen, whose design was chosen from among those of about 18 competitors.

Professor Capper Resigns the Manchester University Chair of Architecture.

The Chair of Architecture in Manchester University has become vacant by the resignation of Professor Stewart H. Capper, M.A., F.S.A., A.R.I.B.A. Professor Capper some time ago met with a riding accident. Pneumonia supervened, and, acting under medical advice, Professor Capper has, to the great regret of all, resigned the chair which he has so long filled with conspicuous ability and success. All will wish him a speedy restoration to full health and activity.

Warming and Ventilating Installations.

Messrs. E. H. Shorland and Brother, Ltd., warming and ventilating engineers, Failsworth, Manchester, report the following installations:—Catholic Cathedral Schools, Plymouth: warm-air ventilating patent Manchester grates and inlet ventilators. Wycliffe Memorial Church and Schools, Preston, Horden Church, Co. Durham, and new schools at Wakefield: patent exhaust roof ventilators. Additions to Farnham Workhouse: patent Manchester grates. Hospital, Riverton, New Zealand: double-fronted patent Manchester stoves, with descending smoke flues. Houghall new infectious hospital, Durham: warm-air ventilating patent Manchester stoves.

National Nautical School, Somersetshire.

The King has expressed his regret that he cannot visit Portishead next month, when the chapel of the National Nautical School is to be dedicated by the Bishop of Bath and Wells. He will be represented on May 14th by H.S.H. Prince Louis of Battenberg. H.R.H. Princess Henry of Battenberg laid the foundation stone of the school buildings some years ago, and H.R.H. Princess Christian

visited Portishead when the school was opened. The school is beautifully situated on the shore of the Bristol Channel. It was built from the designs of Mr. Edward Gabriel (Edmeston and Gabriel), who has also designed the chapel, which is now nearing completion. Messrs. Cowlin and Sons, of Bristol, were the contractors for the school buildings, and Messrs. Samuel Martin and Sons for the chapel.

Delhi Town Planning.

The Government of India are considering the details of the Delhi arrangements, and the Delhi Town Planning Bill will be prepared and taken up during the autumn session of the Legislative Council. There are also possibilities of subsidiary legislation for the Imperial capital. Mr. Brodie, Mr. Lutyens, and Captain Swinton were expected to be in Delhi by April 15th. There are several Town Planning Acts, which the Government may utilise as a guide, particularly the recent ones which deal with this subject in the Philippines and also the Bombay Government Town Planning Legislation. The Bill, it is expected, will be introduced and passed by the end of September.

New Western Approach to London.

The Middlesex County Council last week adopted a series of recommendations presented by the Highways Committee approving of the proposed western approach road to London. It was suggested that in the first instance it should be dealt with by the London and Middlesex County Councils and the Road Board, the question of the contributions of the local authorities concerned being left to the Middlesex Council and the authorities. The scheme is to cost £1,750,000, of which £1,000,000 is applicable to London, and the Road Board is contributing £875,000. The committee thought that, as the new road is properly speaking, a national one, the Road Board should contribute a larger sum.

Incorporated Church Building Society's Grants.

At its usual monthly meeting, held on April 25th, at the Society's House, 7, Dean's Yard, Westminster Abbey, the Hon. Sir E. P. Thesiger, K.C.B., in the chair, grants of money were made in aid of the following objects:—Building new churches at Belfield, S. Ann, Rochdale, £100; and West Fordington, S. Mary, Dorset, £150, with smaller grants, ranging from £20 to £60, to churches at Eastrop, Lincoln, Gillingham, Notts, Derbyshire, Motttingham, and Essex. Four grants were also paid for works completed. In addition the sum of £250 was paid towards the repairs of various churches from trust funds held by the Society. The Annual General Court will be held at 3 p.m. in the Church House, Westminster, on May 23rd, the Bishop of Chester presiding.

Building Stone Made from Blast-Furnace Slag.

The manufacture of building stone from blast-furnace slag is an industry which is now assuming considerable importance in Germany. The process is not patented, and is very simple in details. Practically all blast furnace slag is suitable for stone making, but it must be in a granulated state. After it has been allowed to harden it is unsuitable. All attempts to utilise slag that has been crushed or ground, after having once

hardened, have failed to produce a good solid stone. The slag is granulated by the addition of water as it flows hot from the furnace. The granulated slag after being thoroughly mixed with the required proportion of lime is allowed to stand overnight before being put through the press. After being pressed the stones are stacked in the open air, and, after three or four weeks, according to the weather, they are ready for use. Under low temperature they harden slowly. If subjected to frost before thoroughly hardening they are crumbled and destroyed. Operations may, however, be continued in winter, the stones being hardened in steam-heated drying rooms. These stones grow constantly harder with time.

Architectural Studies at Cambridge University.

The General Board of Studies of Cambridge University recommends that a Board of Architectural Studies be established in the University. It is proposed that the Board should consist of the Vice-Chancellor, the Disney Professor of Archaeology, the Slade Professor of Fine Art, the Professor of Mechanism and Applied Mechanics, the Reader in Classical Archaeology, four members of the Senate elected by the Senate on the nomination of the Council, each of whom should serve for four years, together with two additional members nominated by the Board in the Lent Term of each year. The duty of the Board will be to organise the teaching of architectural subjects in the University, to draw up lecture lists, to include in the lists of lectures published by the General Board of Studies, and to admit students to courses of research in architecture.

The Shrine of the Sacred Heart.

By the completion of the mosaic in the shrine of the Sacred Heart at Westminster Cathedral one is able to gain a better idea than any of the other chapels of the scheme for mosaic decoration for the rest of the building. In accordance with Byzantine tradition, the walls are plated with cool marbles, white and green, while the vaulting is encrusted with vitreous mosaic, chiefly gold and blue. The statue occupies a niche at the top of the shrine, and in front is a large altar with a bas-relief of St. Michael. The statue, which cost over £300, is the gift of the English communities of the Sisters of the Sacred Heart. At the opposite end of the shrine, just under the vault, is a representation of the Sacred Heart in mosaic by the late W. C. Symons; it is the gift of Mrs. Murray. A silver lamp specially designed for Sir Paston Cooper is suspended from the vaulting in front of the statue, and from the silver-plated beams fixed across the shrine at the spring of the vaulting depend electric lamps, silver-plated like the beads. Most of the work for this shrine has been subscribed for by past students of the Sacred Heart nuns and by Catholics generally throughout the Empire.

Port of London Authority's New Office.

Details of the great scheme for providing a fitting home for the Port of London Authority have now become available. A three-acre site has been acquired in the City, forming practically the whole of the area bounded by Seething Lane, Trinity Square, Gt. Tower Street, Crutched Friars, and Savage Gardens. The block of buildings will be next door to Trinity House, and the main entrance



THE NEW HONG-KONG UNIVERSITY. LEIGH AND ORANGE, ARCHITECTS.

will face the Tower. The cost of the freehold is said to have been little short of a million sterling, and nearly a thousand tenants will have to find fresh quarters. Both old and new buildings will be concerned in the demolition. Muscovy House, a block of 150 offices, will come down, and—unless arrangements can be made for incorporation in the new building—the last of the Crutched Friars' Monastery, a fragment of the cloisters, must be swept away. Some of the houses in Savage Gardens are oak-panelled, and of great age. Only two buildings—Mark Lane Station and the offices of the Great Steam Navigation Company in Great Tower Street—will be left standing out of 62 on the island site. The clearance is believed to be the largest ever made in London for the purpose of erecting one set of public offices.

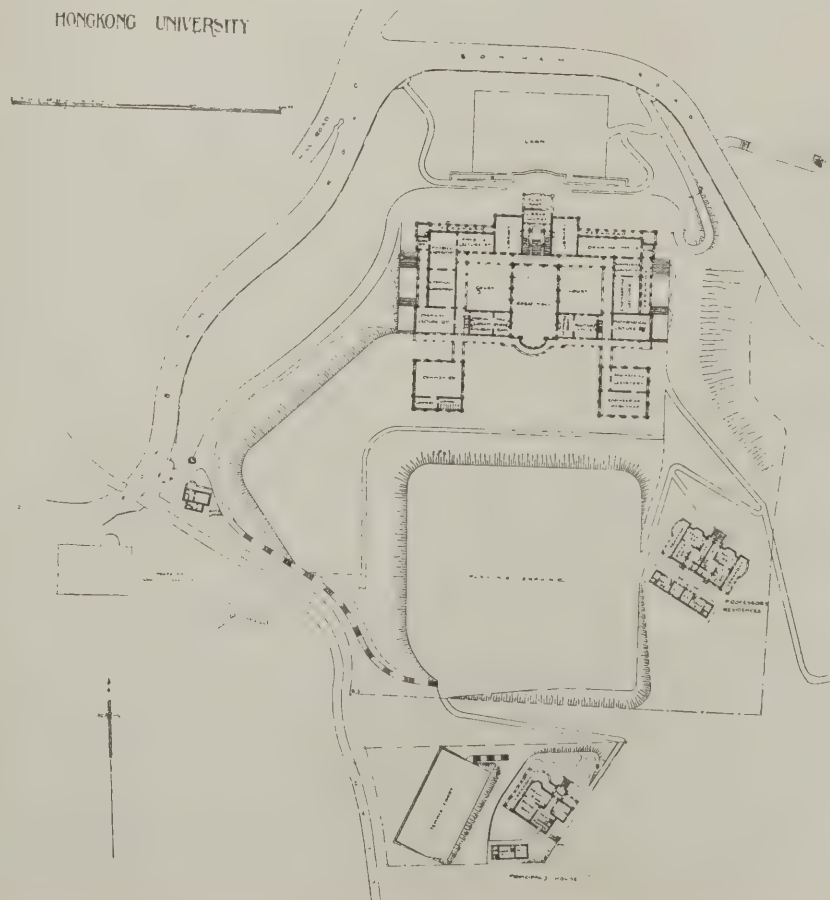
reinforced with Expanded Metal and finished with teak or English tiles. All the woodwork is teak.

The cost of the formation of site and erection of buildings has been \$350,000.00. (about £30,000).

The architects are Messrs. Leigh and Orange, of Hong-Kong, the present members of that firm being Mr. A. H. Ough, F.R.I.B.A., M.Inst.C.E., Mr. Alfred Bryer, and Mr. A. E. Griffin, M.Inst.C.E., and the contractor is Yik Loong.

THE HONG-KONG UNIVERSITY.

The Hong-Kong University was begun on April 20th, 1910, and opened on March 11th, 1912, by H.E. Sir F. Lugard, Governor of Hong-Kong. The site was given by the Colonial Government, and the building by the late Sir Hormusjee Mody. The buildings provide accommodation for 500 students, and are capable of extension. The chief feature is the great hall, 80 ft. by 50 ft., and 43 ft. high, with foyer, flanked by courts, around which are arranged on two floors, eleven classrooms, eight laboratories and workshops, libraries, common room, committee-room, principals' rooms, and offices. In the basement are cloakrooms, lavatories, and servants' quarters. Detached principal's house and professors' houses are finished, and a school of anatomy and residential blocks are in progress. The materials used are local red bricks, with local grey granite and Amoy red brick dressings. The floors are of concrete



MR. E. P. WELLS ON RE-
INFORCED CONCRETE.

A lecture on the subject of reinforced concrete was delivered by Mr. E. P. Wells, J.P., Concrete Institute, on March 18th, at the London County Council School of Building, Ferndale Road, Brixton, S.W., when over one hundred persons were present. A subsequent demonstration was given in the Mechanics Laboratory of a new piece of apparatus which had been designed by the Assistant Principal of the School, Mr. Arthur R. Sage, and Mr. A. E. Everett, for the determination of the Modulus of Elasticity of concrete, which machine is being used in connection with the class instruction in the theory and practice of reinforced-concrete construction given by Mr. H. Kempton Dyson, secretary of the Concrete Institute, and assistants.

The following is a summary of Mr. Wells's lecture, in connection with which 43 lantern slides were shown:—The practical side of reinforced concrete, Mr. Wells contended, was of the utmost importance in view of the poor quality of workmanship ordinarily employed.

The increase in the use of reinforced concrete, since 1900, has been greatly due to the fact that architects, engineers, and others had become convinced of the possibilities of the material. It had been proved to be more economical than steel-frame construction used in buildings, in some cases a saving from 15 to 20 per cent. being effected.

The design of reinforced concrete opened out a great field for efficient instruction therein, which the London County Council School of Building was giving.

In reference to drawings, the lecturer advised the use of single lines varying in thickness, for showing the reinforcement, the advantages being in preventing confusion in being more quickly seen, in not tiring the eyes so readily as two lines, and in saving time.

Referring to materials, he stated that cement should be kept free from dampness, cold or damp air, and stored in airtight bins, and that it should be tested directly it was delivered on the site of the works, and then, if quick use was required, three-day tests should be made. For soundness the Chatelier tests were sufficient.

An instance was referred to of some church foundations where, the cement having been hydrated before use, the concrete showed dampness throughout its entire length, and was easier to excavate after being down 20 years than the clay underneath it. The present-day cement was more liable to hydration than that of 12 to 15 years ago, owing to its greater fineness.

The sand used in concrete should be absolutely clean, and free from dirt, and the grains should not be the same size; this would result in the concrete being more homogeneous, impervious to moisture, and stronger.

Great care should be exercised in the selection of the water, which should be thoroughly clean and free from vegetable matter and salts that are deleterious to concrete; salt water itself did no harm, but it was advisable not to use it owing to its hygroscopic nature. The steel employed should conform to the British Engineering Standards Committee's Specification, and tests should always be made periodically to ensure that the quality did not fall off.

It was advisable to have cubes of concrete made on a job and to test them whatever the time of the year, keeping one set under laboratory conditions and another under the same conditions as those under which the work was carried out. That would form a gauge as to when the concrete on the works reached the strength required to take up the stresses for which it was designed so that it should be known when it was safe to remove the centering.

The centering should not be made of light material, otherwise on removal it might be found that the sides would have bulged out and settlement taken place throughout the work. This was not only ugly, but required extra expense in plastering. Centering should be so constructed that it could be removed easily without having to cut out the timber. In some cases it was more costly to pull down than to put up. The area of the base plates under struts should be sufficient to carry all the loads on them, or else settlement would occur, which would probably result in large shear cracks in the beams over the supports and destruction of the adhesion between the steel and concrete.

Once concrete was put into place, it should on no account be disturbed. The centering should be left up for a minimum period of three weeks, except for floor slabs and the sides of beams, which might be removed within seven days, but should the compression tests disclose a low crushing then the centering should be left in place from 4 to 6 weeks, or even longer.

Efficient superintendents were essential if the work was to be carried out in the manner designed. Lack of attention in this direction often resulted in serious accidents.

Referring to the placing of steel, the lecturer had sometimes employed small concrete blocks, slightly dovetailed in section and lightly reinforced, which were laid at the bottom of the beam casing, thus ensuring that the rods were the proper distance from the bottom and sides of the boxes and preventing any displacement from the calculated positions required.

The concrete should be of a wet nature, to enable it to flow readily round the reinforcement and to do away with excessive ramming and liability of damage to the reinforcement. An advantage of using dry concrete was that it attained its maximum strength at a much earlier period than that of a wet nature, but at the same time oxidation of the steel might set in, due to the concrete being too porous, and also the adhesion in most cases would be weakened.

If on removing centering large aggregate were found on the surface with an insufficient amount of sand, then such portions should be covered with a wash of cement grout, and a one to one sand and cement mortar forced into the interstices and finished off with a wooden float.

A mistake as regards floor finishing with granite or granolithic was to adopt too high a finish for the work, the consequence being that the initial set was broken up before the surface was completely finished. The remedy was to once trowel the floor and then leave it. But if a smooth surface were required it should be rubbed over with holystone and sand.

After the whole works were completed, final testing by loading over at least two bays to an excess of 50 per cent. beyond that for which it was designed was often done. If the work had been carried out efficiently, then the deflection of the floor

noticed should, after the load had been taken off, be entirely recovered and return to its normal state.

Mr. H. Kempton Dyson, lecturer on Reinforced Concrete and Structural Engineering at the School, in proposing a vote of thanks, stated that the course of instruction given was one of the most complete in the world, and that the London County Council School of Building was first and foremost in devoting great attention to the practical side by means of lectures and workshop practice, and without such practical study designers of reinforced concrete could not be thoroughly efficient.

BOOKS.

A French Manual of Reinforced Concrete.

French scientific and technical treatises are universally commended for their clearness of exposition, which is commonly attributed to the extreme neatness and precision of the language. On the other hand, it is sometimes complained that the quality of simplicity is overdone—that French text-books are apt to contain, in elaborate detail, much rudimentary matter that might well be taken for granted, or at least dismissed without labouring the point. Much, however, depends on the subject. An elementary treatise on reinforced concrete can hardly be too simple, or, within its scope, too comprehensive, and M. Salembier may therefore be held blameless for the thoroughness with which he has expounded the rudiments of the subject, and he is to be congratulated on his adherence to the tradition of lucidity to which he is heir.

The author begins with Tedesco's definition of reinforced concrete: "Concrete reinforced with bars of iron or of steel so that the combined resistance of these two materials serves effectually to support the loads, the metal being entirely surrounded by concrete." Then follows a very brief sketch of the history of the system, in which it is recalled, not without a touch of legitimate patriotic pride, that "reinforced concrete had its birth in France. It was a Frenchman—Joseph Monier—who, in the second half of the nineteenth century, first employed the combination of concrete and iron, materials which comprise between them the necessary properties for resisting tension and compression." Another Frenchman, M. Fr. Coignet, foresaw, about 1861, the possibilities of reinforced concrete; and a French marine engineer, M. Mazas, formulated, in 1876-77, the first bases of calculation for the new process of construction.

The advantages of reinforced concrete, as set forth by M. Salembier, are familiar enough, but the leading points may nevertheless be usefully repeated. Briefly they are as follows: The material is in the highest degree incombustible, and is therefore particularly suitable for the construction of theatres and other places of assembly, ensuring as far as possible the safety of human life by preventing and resisting outbreaks of fire, and in the same way affording the utmost security for the precious collections that are housed in museums and art galleries. Reinforced-concrete columns, it is again asserted, offer an appreciable advantage over unprotected iron columns, which, under the influence of fire, may either become contorted and tumble down, or, by mere expansion, may ruin the structure they were designed to support.

On the other hand, concrete, being a bad conductor of heat, offers effectual resistance, suffers but little damage in itself, and does none to its surroundings. The great strength relative to the comparative thinness of section of the walls, and their monolithic solidity, renders the material economical for large buildings; the cantilevering it makes possible prevents obstruction and saves valuable space; and M. Salembier lays stress on its hygienic value for the construction of hospitals, schools, and similar institutions, because it is not subject to decay, does not harbour disease germs, and is innocuous to vermin. The author's claim that, being a plastic material, it readily lends itself to decorative treatment, is one that may easily be pushed too far. Ornamentation is perhaps more possible than desirable in the kinds of buildings to which reinforced concrete seems most appropriate; and if the designers continue to give us buildings in which fitness, harmony, and proportion are duly observed, the question of decorative detail may be dismissed with the suggestion that reinforced concrete is "when unadorned adorned the most." M. Salembier's manual, which contains ninety useful diagrams, is published at Paris by Dunod et Pinat, 47 and 49, Quai des Grands-Augustins. In the section on materials, the name of the inventor of Portland cement (Joseph Aspdin) is misprinted 'Aspdier.'

An Elementary Manual of Reinforced Concrete.

In producing "Elementary Principles of Reinforced Concrete Construction," the author's aim was to meet the demand for an inexpensive book, written from an elementary standpoint in an explanatory manner, without the use of advanced mathematics, but at the same time in accordance with the best accepted theory. His method consists in explaining the theory of each problem, and illustrating it by worked examples. In a preliminary note on the economy of reinforced concrete, the case is thus stated: "Roughly speaking, steel costs volume for volume about fifty times as much as concrete. Steel is about thirty times as strong as concrete in compression, and three hundred times as strong in tension; so that to carry a given load in compression the cost of concrete will be about three-fifths that of steel, while for tension the cost of concrete will be about six times that of steel. In a structure, therefore, in which some portions are subjected to compression and some to tension, we can get by a scientific combination of steel and concrete a more economical result than would be obtained with either material alone." Unlike M. Salembier, who, as noted above, claims the invention of reinforced concrete for M. Monier, Mr. Andrews gives precedence to an Englishman, Mr. W. B. Wilkinson, of Newcastle-on-Tyne, who in 1854 took out a patent for fire-resisting construction in which the fundamental principles of modern reinforced-concrete construction are embodied. The expository portion of the book, which seems, on a cursory examination, to be well and thoroughly done, is followed by a chapter in which the leading systems of reinforced concrete are described and illustrated; and the book forms an easily graded and altogether convenient approach to a subject that grows daily in importance, and of which complete ignorance is no longer excusable, seeing that treatises on it are now plentiful and are becoming cheap. The notation adopted through-

out is that put forward by the Concrete Institute. One or two very slight misprints leap to the eye, such as the misprint of the late L. G. Mouchel's name on p. 154, the use of an acute instead of a grave accent in the name of M. Considère, and the omission of the cedilla from François.

Elementary Principles of Reinforced Concrete Construction. A Text book for the use of Students, Engineers, Architects, and Builders. By Ewart S. Andrews, B.Sc.Eng. (London). With numerous illustrations and worked examples. London: Scott, Greenwood and Sons, 8, Broadway, Ludgate, E.C. Pages xii. + 196, 7½ins. by 4½ins., price 3s. net.

CONCRETE FOR GREENHOUSES.

Concrete is rapidly superseding wood in greenhouse construction. The conditions, both inside and outside a greenhouse, are very unfavourable to woodwork, of which the very best yields quickly to the influences of heat and moisture to which it is continually subjected. A method of protecting the timber with concrete is, it is stated, proving very satisfactory at the extensive greenhouses of the Poehlmann Brothers Co., Morton Grove, Illinois, which cover approximately thirty-seven acres.

The greenhouses are built 27 ft. wide, and there are 37,800 linear ft. of these houses. In this immense flower factory, where 300 men are employed, timber at one time was used exclusively in the construction of benches, but even cypress would last only a few years, so the company began experimenting with the use of concrete. At first only the posts were made of concrete to support the wooden benches. In the greenhouses of the George Witthold Co., Chicago, benches were made 250 ft. long and 5 ft. wide, and are very satisfactory except that they cannot be moved. Poehlmann Brothers are now using benches made of concrete lumber, set up in sections.

The bench is described as follows: It consists of a 6 in. tapered post having a

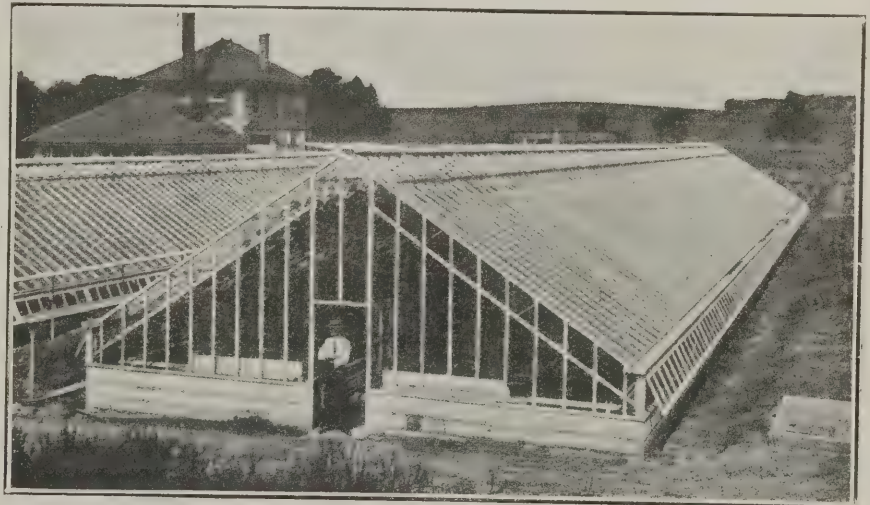
10 in. base, cross beams 49 in. long, 6½ in. deep, and 1½ in. thick, resting in slots in the post; stringers 6 ft. 2½ in. long, 4 in. wide, and 2 in. thick resting on the cross beams; side pieces of "L" section, 6 ft. long by 10 in. high and 1½ in. thick, with an angle cast at the bottom 3½ in. wide forming the rest for bottom slabs. There are end pieces of the same section, and there are bench slabs 53 in. long, 9½ in. wide, and 1½ in. thick resting on the sides and also on the stringer at the centre.

The bottom slabs lock the whole structure together, so that it has all the stability of a monolith. Each member is reinforced both with chicken wire and with several ½ in. twisted square bars, except the stringers, which have two ½ in. bars only. The forms were made by greenhouse employees. All drains and sewers in these greenhouses also are of concrete.

One of the accompanying illustrations shows a bench all put together except for some of the bottom slabs, which were left out to show construction, and these pieces were set up by three men in about ten minutes, from the piles of "concrete lumber" which are seen in the background of the illustration. Other illustrations show the use of concrete block in greenhouse construction on the estate of O. C. Barber, near Barberton, O.

The Dowdeswell Gallery.

At this gallery there is a collection of small landscapes in water-colour by Mr. Oliver Hall. Like one or two other etchers who occasionally paint in water-colour, Mr. Hall seems to have acquired, in the frequent treatment of landscape in black and white, a peculiar sense of colour in nature. His small landscapes are always admirably composed, but their effect seems to depend on oppositions of dark and light (dark often much predominating) rather than on colour.



USE OF CONCRETE IN GREENHOUSES.

SOCIETY OF ARCHITECTS.

The sixth ordinary meeting of the session 1911-12 of the Society of Architects was held at 28, Bedford Square, W.C., on April 11th, at 8 p.m. Mr. Percy B. Tubbs, F.R.I.B.A., vice-president, having taken the chair, in the unavoidable absence of the President, twenty nominations for membership and six for studentship were announced.

The ballot was then taken, and the following candidates were declared to be duly elected as members:—Browne, F. A., Chelmsford; Foley, T., Yorks; Valentin, G. S., London, W.C. Ten candidates were elected as students.

Mr. C. McArthur Butler, F.C.I.S., Secretary of the Society, then opened a discussion on "Some Principles of Professional Practice and a Code of Ethics." Extracts from his paper were given in our issue of April 17th. A summary of the discussion appears in another part of the present issue.

The Annual Dinner.

The twenty-eighth annual dinner of the Society was held on Friday last, April 26th, at the Holborn Restaurant, the president, Mr. George E. Bond, J.P., being in the chair.

At the conclusion of the dinner Sir G. Lawrence Gomme proposed the toast of "The Houses of Parliament," to which the Right Hon. Lord Saye and Sele and Mr. L. A. Atherley Jones, K.C., M.P., replied.

Judge Rentoul, I.L.D., proposing the toast of "The Society of Architects," said he had always had a great interest in the Society since it came into existence in the same year as he became a barrister. On behalf of the Society he then presented Mr. Bond with a medal which, he said, he knew would be prized, not for its intrinsic value, but as the expression of the Society's strong approbation in electing him as president so many times in succession.

Mr. George E. Bond, in reply, referred to the steady increase in the Society's membership and to the progressive development of its financial position. Having recapitulated the progress of the Registration movement, and having referred at some length to the negotiations between the Society and the Royal Institute, the speaker said: "Most of you know how, after being approved by the Councils and members of both bodies, a legal hitch occurred in regard to the power of the Institute to enter into an agreement, how its Council immediately set to work upon an amendment to the Charter, with a view to surmounting that difficulty, and how it was a second time submitted for approval, in a meeting at which about a seventh of the Institutes' members were present, and which was obviously packed by an organised opposition, consisting of junior members; it was referred back, ostensibly upon a side issue about which we care nothing; and by what was practically an adverse vote, the twelve months' ceaseless thought and study given to the subject in all its bearings by their duly appointed representatives and nominal leaders has been rendered of no avail. No great progressive movement was ever carried to a successful issue without some sacrifice; but the grand ideal of our leaders, who aimed at nothing less than the establishment of that professional unity within one strong institution, which would have rendered all ethical and educational reforms within our ranks much easier of attainment; and would, at the same time, have

positively secured that unity of action in regard to Registration which is essential to success; was apparently, by some of our younger men in the profession, not considered worth even the sacrifice of a little petty pride; for with the arrogance which usually accompanies immature thought, they had no difficulty in assuming that they were perfectly justified in committing themselves to a wrecking policy before they had even heard the other side of the question. And I am convinced that all thoughtful members of the profession were both sorry and surprised to find that many members of the very class which had everything to gain and nothing to lose under any scheme of Registration, had so readily allowed their vanity to be exploited, by two or three irresponsible individuals, whose egoism constituted their one and only claim to leadership in the matter. The present position is an eminently unsatisfactory one, for I say, without hesitation, the real voice of the Royal Institute has not yet been heard upon the question."

Mr. Bond then heartily thanked Judge Rentoul, his colleagues and Council for the kindly thought which prompted the presentation of the medal for whatever services he had been able to render the Society.

Mr. Percy B. Tubbs proposed the final toast, "The Guests," which was responded to by Mr. J. S. Gibson and Mr. A. Needham Wilson, both of whom reasserted their confidence in the ultimate fusion of the two institutions.

SOCIETIES AND INSTITUTIONS.

Liverpool Architectural Society.

The annual meeting of the members of the Liverpool Architectural Society was held last week, Mr. Arnold Thornely, the retiring president, in the chair. The council recorded with regret the death of Mr. H. Blomfield Bare, who had been a member of the society for many years, and was a vice-president in 1888. The council had communicated with several of the bodies interested in the memorial to Sir Alfred Jones, the work of which had been placed in the hands of Sir George Frampton, R.A., urging the desirability of selecting a suitable site before the completion of the design, and advocating the laying-out of the landing-stage approaches in a manner which would afford many excellent sites for monumental statuary. The following officers were elected:—President, G. Hastwell Grayson; vice-presidents, E. P. Hinde and W. Glen Dobie; hon. secretaries, Gilbert Fraser and E. L. Bower; hon. auditors, John Woolfall and T. F. Shephard. As unofficial members of the council there were elected:—J. Dod, T. E. Eccles, C. H. Reilly, P. C. Thicknesse, Arnold Thornely, W. E. Willink, and R. B. Holt (fellows), and L. P. Abercrombie and F. E. G. Badger (associates).

Leeds and Yorkshire Architectural Society.

At the last meeting of this society the officers for the next session were elected as follows:—President, Mr. A. E. Kirk; vice-presidents, Mr. G. F. Bowman, and Mr. J. F. Walsh; members of council; Messrs. W. J. Morely, C. B. Howdill, G. W. Smithson, J. C. Procter, G. J. Combs, and Douglas Bowman (associate member); hon. treasurer, Mr. R. Fielding Farrar; hon. librarian, Mr. W. Peel Schofield; hon. secretary, Mr. Wm. Whitehead. A

vote of thanks was accorded to Mr. Sydney D. Kitson on his retirement from the president's chair. He had worked hard during his term of office, and with a spirit of comradeship that had been pleasant for everybody.

Devon and Exeter Architectural Society.

The "Journal of Proceedings, 1911-12" of this society contains the annual report for 1911, which gives the membership at the end of that year as standing at 82. The presidential address by Mr. James Jerman, F.R.I.B.A.; the same gentleman's "Reflections on the International Congress of Architects at Rome, 1911"; "Venice and its Reception of the International Congress of Architects, 1911," by Mr. Harbottle Reed, F.R.I.B.A.; and a summary of a paper by Mr. J. Archibald Lucas, F.S.I., on "Some Bits of Architecture from the Valley of the Loire." Lists of officers and members are included, and for frontispiece there is a portrait of the 1912 President, Mr. E. Coath Adams, M.S.A.

London Master Builders' Association.

A council meeting of the London Master Builders' Association was held in the Council Chamber, Koh-i-Noor House, Kingsway, W.C., on April 18th, the President (Mr. James S. Holliday) in the chair.

The President reported that the Special Committee and the Law and Parliamentary Committee had met, and would in due course submit their reports to the council.

Correspondence relating to Priced Schedules with Tenders, Provisional Sums in Quantities, etc., was read, and instructions were given.

Various other trade matters of interest were considered.

Messrs. Messers, Ltd., were elected an Associate Member of the Association, and the following firms were nominated for membership: (1) Messrs. H. J. Carter, Ltd., as ordinary member; (2) Messrs. Bovis, Ltd., as ordinary member; (3) Mr. J. B. Smith, as associate member.

COMPETITIONS.

Council School, Knavesmire.

The assessors in this competition Messrs. T. Mellard Reade and Son, announce the awards in this competition as follows: 1, Mr. John T. Proffitt, Walkden; 2, Mr. E. R. Barrow, F.R.I.B.A., London; 3, Mr. J. A. O. Allan, Aberdeen.

Football Grand Stand, Cardiff.

In this competition, in which Cardiff Rugby Football Club invited designs for a new grand stand, etc., the following awards are announced; 1, (£30), Mr. Leitch, Liverpool; 2 (£20), Messrs. R. and S. Williams, Cardiff; 3 (£10), Messrs. Ivor Jones and Percy Thomas, Cardiff.

OCTOBER 1. KING EDWARD MONUMENT, OTTAWA.—Designs for a monument to King Edward VII., to be erected at Ottawa, and to cost about \$35,000, are invited by the Public Works Department of that city. Sketch models in plaster (scale $1\frac{1}{2}$ in. to the foot) are to be delivered to Mr. Eric Brown, Director, National Art Gallery, Ottawa. Particulars from Secretary, Public Works Department, Ottawa.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY

MAY 8th, 1912.

Volume XXXV.

No. 903.



CHIMNEYPiece IN DRAWING-ROOM AT "LITTLECROFT" OAKLEIGH
PARK WHETSTONE, LONDON, N. ARTHUR KEEN, F.R.I.B.A.,
ARCHITECT. ■ PLASTERWORK PANEL BY GEORGE JACK.



HOUSE AT GARBOLDISHAM, NORFOLK : GARDEN FRONT. P. MORLEY, HORDER, F.R.I.B.A., ARCHITECT

This house was built behind an old malthouse, on the road, and a picturesque group of buildings has been thus achieved. As will be seen from the plan on page 486, there is a small court formed by the house and former malthouse, connected on one side by a covered walkway, and on the other by a long pergola shutting off the private flower garden. The old malthouse formed useful stable buildings on one side, with a small cottage entered off the covered walkway made through the old building. The new house is of brick, rough-cast, with old pantile roof. Mr. P. Morley, Horder, F.R.I.B.A., of London, W., was the architect.

THE ARCHITECTS' & BUILDERS' JOURNAL.

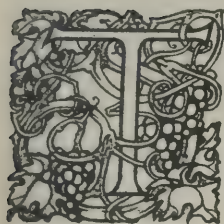
MAY 8th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 903.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Architecture at the Royal Academy.



THE first thing that strikes one in the architectural collection at the Royal Academy this year is the large and unusual proportion of drawings of church architecture. These form such an important element in the show that they may be considered separately, on another occasion, under the heading of Church Archi-

ture. For the present we will confine our attention to the works of Academicians, and to those exhibits which illustrate public architecture.

Taking the Academicians in their alphabetical order, we come first on four works by Mr. Belcher. The "New Premises for the Royal Society of Medicine, Henrietta Street" (1,545: no plan), is a very plain building of Classic style, with a Roman Doric Order of four columns in the centre portion, and a cornice from which the orthodox frieze is omitted, and the architrave (except over the columns), decorated with a key-pattern ornament which to some extent makes it play the part of a frieze. The design is well balanced, and makes an agreeable whole, somewhat spoiled by the ornament on each side of the side windows, where a vertically depending fillet runs through six projecting blocks, as if they were pierced for it; one of the prevalent tricks of architectural ornament of this decade. Morden House, Blackheath (1,593: no plan), is merely a picture of a rather commonplace house and gardens. The interior of "Holy Trinity Church, Kingsway" (1,603), is shown in a slightly executed water-colour sketch; an interior with a semicircular plastered barrel ceiling into which the arches of the windows at the side cut in a manner that makes a very ungraceful contorted line. A band of coloured decoration on the ceiling connects the heads of these two windows, and does something to carry off their rather accidental appearance; the effect of the coloured decoration in the semi-dome over the apse is well indicated. There is no plan to this either, which is less important in a mere sketch of the interior effect of a single compartment, but the house (No. 1,593) absolutely needed a plan to give it any architectural value. No. 1,758 (no plan) is a dry mechanical elevation of Whiteley's premises in Queen's Road, all columns and glass, with an octagon cupola at each end. We should at least have had a section through the front wall to show the construction.

Professor Blomfield adds to his perspective view of "Wretham Hall, Norfolk" (1,581), a complete plan of a symmetrical mansion like the letter I laid horizontally, the drawing-room and library, dining-room and billiard-room, occupying the cross blocks at each end; the entrance being in the centre of the recessed face. It is mainly a brick house with portions of the wall emphasised by rather narrow brick pilasters, the roof line at each end being broken by a square-lined erection above the cornice, treated rather more decoratively than the rest. It is not a building to excite enthusiasm, but as house architecture it is eminently sensible; the only detail we do not quite like is the curved-out line of architrave moulding to the entrance-door, which rather quarrels with the severe lines of the general design. "Manoir de la Trinité, Jersey" (1,634: no plan), is a remark-

ably effective exhibit strongly shaded in black and white which attracts one mainly as an original and a powerful drawing; the treatment is very simple, but the projecting mouldings to form a base to the pilasters on the upper part of the porch hang rather awkwardly on to the angle. "Lincoln Free Library: details" (1,755) is a kind of drawing we wish there were more of in the architectural room; it is a working section of the entrance pavilion and dome, with details of the construction and materials completely given; a small perspective sketch of the whole building being included to show how the dome comes into the general design. That is what we call really an architectural drawing in the true sense of the word. We presume that the hanging strings and knots of flowers at each side of the doorway is a kind of detail in which many architects at present find pleasure, else we should not see it so often now; but it is a taste we cannot pretend to understand.

After this we come into the region of pictorial sketches. "A wood-frame house in British Guiana" (1,598: no plan), by Sir E. George and Mr. Yeates, is an interesting experiment in the treatment of a house of this kind in an architectural manner quite different from that of the ordinary type of wood-frame house, so as to suit it to climate and surroundings.

By the same architects is "Woodside, Esher," a water-colour drawing of a house in more of a Georgian style, with a square projection on columns forming a porch in front, and a large semicircular columned porch round the angle, looking rather too large for the scale of the house. A plan would have shown the meaning of this. Mr. Ernest Newton's "Oldcastle, Dallington" (1,623), is a very pleasing water-colour sketch of the end of a house, and No. 1,628, a small drawing showing the garden front of the same house, a long low building giving the idea of being an old farmhouse remodelled. No. 1,629 is a water colour of the garden front of "The Greenway, Cheltenham," a three-gabled house, shown nearly in elevation. None of these last-named five drawings has any plan.

Mr. Jackson does not exhibit this year. Sir Aston Webb shows carefully finished water-colours by Mr. Gascoyne of two interiors from his design. "New Chapel, Worksop College" (1,663), is an interior with a pointed-arch barrel vault in timber and plaster, the principals and rafters slightly decorated in colour; the principals spring from stone wall-shafts. The woodwork of the stalls is solid and plain in treatment, capped by a cove cornice, and broken here and there by a projecting canopy over the seat—altogether a good example of the orthodox form of College Chapel. "Offices of the Grand Trunk Railway of Canada" (1,711) shows the interior of an imposing room, the official portion forming an apse with the counter on the chord of it; the floor is boldly treated in a large simple design of black and white marble, and the wall above the wainscot pointed as a large pictorial frieze in colour. Plans are not so necessary to these two drawings, as they represent each the interior effect of a single apartment; still, plans had better have been given, if only to set a good example.

Among designs for public buildings are several for the Art Gallery at Manchester. Messrs. Adams and Holden's (1,554: no plan) is an extremely, almost defiantly solid design with masses of rustication at the angles, a colonnade along one side, and an immense blocking mass extending

over a great part of the area of the building. The elevation of the columnar front is shown in No. 1,721; the design was hardly worth two large drawings in the limited space of the Academy Rooms; its massiveness is overdone. Messrs. Warwick and Hall's design (1,557; no plan) is a better one, more refined in detail and less heavy in general effect; but we cannot understand the beauty or significance of that manner of finishing above the cornice with a mass of masonry designed so as to give the idea of two or three sarcophagi piled one upon another. Of course it meets us everywhere in competition drawings at present, but it is a mere fashion, with no architectural meaning. Mr. Worthington exhibits another design for the same building (1,568: no plan), a good Classic design with a projecting centre; in the wings the treatment with windows below and niches with statues in a blank wall above suggests the idea of its internal arrangement as a picture-gallery. Mr. Robert Atkinson exhibits yet another design (1,724: no plan), a large and fine perspective, dignified but not very original. None of these designs shows anything but the outer aspect of an Art Gallery; what the exterior is built on and how the gallery is arranged, there is nothing to show.

Mr. Cooper wisely gives two complete plans accompanying his illustration of the design for Marylebone Town Hall (1,559); it is a well-planned building, with the sole defect that the corridor communication is not continuous. When corridors on the opposite sides of a plan each end in a door to a central room, that room must become occasionally a passage, and it is better to avoid such a result. The tall tower behind the front does not seem at all necessary to the design, and there is no adequate base for it in the plan.

Messrs. Lanchester and Rickards's "Study for the Royal Memorial, Parliament Square" (1,569) is a mere sketch, but a very brilliant one, quite worth exhibiting; it shows a triumphal arch with a quadriga on the top and an equestrian statue beneath the arch; there is an extended base in the shape of steps, balustrades, and parterres decoratively arranged; the whole a fine scheme for a monument of this kind.

Professor Pite seems to be rather under the influence of Egyptian ideas in his "Design for Insurance Offices, Holborn" (1,710: no plan), for the centre feature has certainly a resemblance to a tall Egyptian square-headed doorway with the usual cove cornice over it; apparently the centre of this is filled up by three storeys of sculptured figures with openings between them. On each side of the centre are six columns of a freely treated Ionic order. All this is very good, but the details of the actual doorway seem to fit in rather awkwardly, and do not belong to the main design, nor does the square erection above the centre. It is a clever effort at something new and original, but rather wanting coherence.

In Nos. 1,722 and 1,730 we have two remarkable drawings by Mr. J. J. Burnet of the staircase in the new part of the British Museum, treated in isometrical perspective, with the main construction shown in section; a method of illustrating architectural design more in use with the French than with us. Two small plans are given as a key to the drawings, but it is not quite easy to connect them with the position of some of the columns as shown in the perspective. However, these are two of the most brilliant drawings in the room, and (like Professor Blomfield's dome detail, before referred to) represent a kind of drawing that we wish we saw more of in the architectural room.

Messrs. Smith and Brewer exhibit a large and fine perspective view of their design for the National Museum of Wales, accompanied by two plans to a fairly large scale. The design is dignified Classic, with a low leaded dome over the centre of the front block; but why not have made it an exterior stone dome? It would have looked far more monumental. The attempt to treat a dome as an exterior stone erection should be made oftener than it is; it requires care, but it has been done, and therefore can be done again. We do not quite understand how the authors proposed to work the "reserve space" all round outside the main plan. The "Clock-tower in Course of Erection at Buenos Aires"

(1,746), by Mr. Ambrose Poynter, is shown in a very large elevation drawing; it has a brick stalk rising from a two storeyed stone base of Elizabethan character, and with stone lantern above the clock face. We cannot feel very enthusiastic about the details or the general design, which is somewhat commonplace. Mr. Arnold Mitchell's "Northwestern Polytechnic" (1,749), shown in plan and elevation is an exceedingly simple brick building, with unbroke rows of windows, with a long modillion cornice; there is no much in it, but there is nothing to object to. We find three competitive designs for Marylebone Town Hall, by Messrs. E. T. and E. S. Hall (1,751), Mr. Robert Atkinson (1,750) and Mr. C. Gascoyne; all of some merit as exteriors.

A large bird's-eye view of the neighbourhood around St. James's Park, called "Design for a Development Scheme," by Messrs. Berrington and Jemmett, is of some interest though some of it does not express their intentions very clearly. They seem to contemplate, among other things, a rebuilding of Buckingham Palace, with two concave wings something like old Buckingham House, facing the new avenue up to Piccadilly. The meaning of the whole picture would have been very much helped by a small plan of the scheme, to scale; there is plenty of room for it on the drawing.

In the interior view of "The Council Chamber, New London County Hall" (1,727), by Mr. Ralph Knott, we see a very satisfactory promise as to the interior architecture of the new County Hall. The drawing, by Mr. Horsnell, which is slightly executed but in a masterly style, shows the room arranged for seating in semicircular lines, with an architectural treatment which is simple and dignified, with seated statues in the niches in the wall, which form the principal decorative incidents. There is, however, one point for criticism. It is not easy to see, from the shading of the drawing, whether the central portion of the ceiling is intended to be domical or whether it is a flat unbroken space (a small section appended to the drawing would have made this clear), but in either case that ceiling would produce echo. A ceiling, whether flat or domed, of which the surface is not broken up in any way, will always produce echo in a room of any height. That point should be considered before it is too late.

There are two models exhibited in the architectural room. One of them is a model of one façade of the Glamorgan County Hall design by Messrs. Harris and Moodie. It shows a colonnade standing free in front of the walls, stopped by two square pavilions which seem to want something on the top to finish them. The lower porches at the end do not join very well to the main block, and consequently look too much like afterthoughts. The other model is a "Sketch model of a country house," by Mr. Jaggard. This shows a good and interesting arrangement of plan around a courtyard, but a compass should have been added to show the aspect of the rooms. The model makes a picturesque whole, though the treatment of the upper storey with over-sailing construction in black and white is an anachronism in these days.

The Welsh Museum.

WE publish on page 469 a photograph of a large model of the Welsh National Museum to be built at Cardiff, which is now exhibited, by permission of the First Commissioner of Works, in the Petitions Room, off Westminster Hall. The cost of the building is to be defrayed from various sources, including local rates and voluntary subscriptions, and the Welsh Party hope to get the good offices of the Chancellor of the Exchequer to secure a grant from the Treasury. Cardiff crowned its ambition to be the metropolis of Wales by getting possession of Cathays Park, in the centre of the city, in which the Law Courts and City Hall, designed by Messrs. Lanchester and Rickards, now stand. The South Wales College of the University of Wales (designed by Mr. Caröe) is also in process of completion, and here, too, is to be erected the Welsh National Museum, the architects of which are Messrs. Smith and Brewer.

Royal Academy Pictures.

THE impression left by a general survey of the pictures this year is that it is a collection of a great many highly finished pictures, many of them very pleasing, but nothing great among them. There is no work that can be regarded as essentially the leading picture of the year, in an artistic sense, though no doubt Mr. Bacon's picture of the Coronation will take that place in a popular sense; but the interest in that kind of picture is not primarily artistic, and we would much rather have seen Mr. Bacon's talents employed on something different.

The exhibition is strongest in portraits, of which there are many fine examples, notably the two by Mr. Orpen, in Galleries II. and III.; in the former he has managed to make the head of the sitter stand out with great power in a generally light picture, without any forcing of the effect. The other work, "A Lady and Gentleman," is in the manner that he almost originated, of treating a portrait as a figure in an interior, in which the surroundings are pictorially as important as the figure; this is the best of the type that he has exhibited. Mr. Orpen seems to have fairly found himself now, and it is to be hoped he will give up experimenting. Among portraits of the more usual type, those which make no pretence to be anything but a portrait, Mr. J. Shannon's are the finest in an artistic sense, from the rich and harmonious colouring which he produces in the treatment of the costume; that of Mrs. Wigan in Gallery III. is especially fine. In this respect Mr. Dicksee's portrait of a lady in bright green, in the same room, looks somewhat crude by

trivial in subject for its size; one wants some better reason for so large a canvas. Mr. Bundy has made a spirited attempt to realise the place and the audience at "The first performance of the 'Merry Wives of Windsor'"; to give an idea of the kind of rabble of an audience for which Shakespeare's comedies were produced; it is clever and worth study, but somewhat confused in composition. Mr. Waterhouse's "Penelope and the Suitors" is a very pretty picture, both in design and colour, but anything more absolutely out of the atmosphere of archaic Greece one could not imagine; and Penelope is a young girl, whereas she must have been a middle-aged woman; it was her wealth that the "suitors" courted.

Among figure-pictures, or those in which figures are an important element, which may be counted among the successes of the year, are Mr. Henry's "The Picnic," a masterly sketch of a forest scene, in Gallery I.; and in the same room Mr. Hacker's "Imprisoned Spring," a cottage girl, the sole inmate of a room with the bright sun pouring in through the window; a little bit of pathos of real life very completely worked out in every detail. "Springtime" is a good *pointilliste* landscape with figures by Mr. Mark Senior. Then there is Mr. Stanhope Forbes's "The Drinking-trough," in Gallery III., one of those works in which a common incident of country life is translated into a picture, because the artist knows how to see it; there is nothing in the scene, one would have thought; it is the painting that does it. Mr. La Thangue's "A Sussex Common," with a boy leading a cow in the foreground, is another fine work



MODEL OF WELSH NATIONAL MUSEUM TO BE ERECTED IN CATHAYS PARK, CARDIFF.
SMITH AND BREWER, F.F.R.I.B.A., ARCHITECTS.

comparison; it is a furniture and costume portrait. The portraits of men give no opportunity for rich colour schemes; in them we have to look rather to the expression of character. In this respect Mr. Cope's portrait of Mr. S. Roberts, in Gallery V., a quiet, unassuming work which many would no doubt pass over, is one of the cleverest and most successful of its type.

Among what may be called figure subjects the late Mr. Abbey's "Education of Isabella the Catholic" (unfinished) is interesting as an obvious attempt to contrast bright English nature with religious asceticism; it would hardly have been one of Abbey's great works, but it has a point of meaning dramatically expressed. Sir L. Alma Tadema has moved from his accustomed position in Gallery III. to a place in Gallery I., with a larger picture than usual, with a less subject than usual—"Preparations: in the Museum." It is mainly a study of architectural and decorative detail in what might be called the Imperial box in the foreground, with the marble stalls for the favoured few, the mosaic-paved corridor in front of them, and the numbered seats for the populace rising in tiers behind. It is a splendid study in archaeological realism, and in perspective and texture of marble and other materials; the figure of the female attendant in the foreground is the least interesting part. Other figure subjects the largest and most ambitious are the best. Mr. Gow's "Tumult in the House of Commons, March 2nd, 1862," justifies its scale only in the subject, and in the treatment, which is unreal and theatrical; on the other hand, Mrs. Laura Knight's "The Flower," in Gallery I., a most brilliant and forcible piece of painting, is far too

of the same class. Mr. Wetherbee, in "Butterflies," idealises rural life a little, with a lovely result, both in colour and in the expressive line of the three figures in chase after the butterflies; a little less of fact here and a little more of poetry. Mr. M. Hornel, in "Crossing the Brook," is beginning to get a little more out of his peculiar programme than he used to; the figures do not look so much imbedded in a mosaic. He has been "skied" this year; perhaps a hint that he has carried on one experiment long enough.

There are some fine landscapes. Mr. Lamorna Birch, in his view in the "Wengen Heights" ("Wengern"?), has not quite equalled his "Cornwall" of last year. Sir Alfred East, in his "Tranquil River," is a little too tranquil in style; "Under the Wold," in Gallery VIII., is in his stronger manner. Mr. H. W. B. Davis has his usual number of landscapes, which are always charming, but never powerful; Mr. Arnesly Brown strikes a much stronger note in his "Norfolk Landscape." Among landscapes by less well-known painters Mr. Goodman's "The Walls of England," though heavy and loaded in tone, deserves recognition; and there is a great truth of colour and effect on the small landscape by Mr. Alfred Oliver, called "A Breezy Day."

This is certainly not a great year for sculpture; there are too many memorial statues in costume, though Mr. Drury has made something sculptural of the simple dress of Mrs. Fry the Quakeress. In the Octagon, Mr. Garbe's "The Magdalenes" is a beautiful and expressive group of two figures, though it rather needs an explanation of its intention; and in the Octagon is also a good "Fountain of the Valkyrs," by Mr. Gilbert Bayes; a piece of decorative

work on a small scale. To the same class of work belongs one of the best things in the Lecture-Room, Mr. Reynolds-Stephens's statuette of a lady, with a decoratively treated pedestal. Mr. Colton's "The River unto the Sea" and Mr. Babb's "Love and the Vestal" are both works which answer the true aim of sculpture, the indication of an abstract idea through sculptured form. There are some good small works, but the sculpture collection begins to remind us a little too much of the rows of busts of the old Academy exhibitions. That is not entirely the fault of the sculptors. There is talent enough among English sculptors, if it got more opportunity and encouragement.

The Protection of Ancient Monuments.

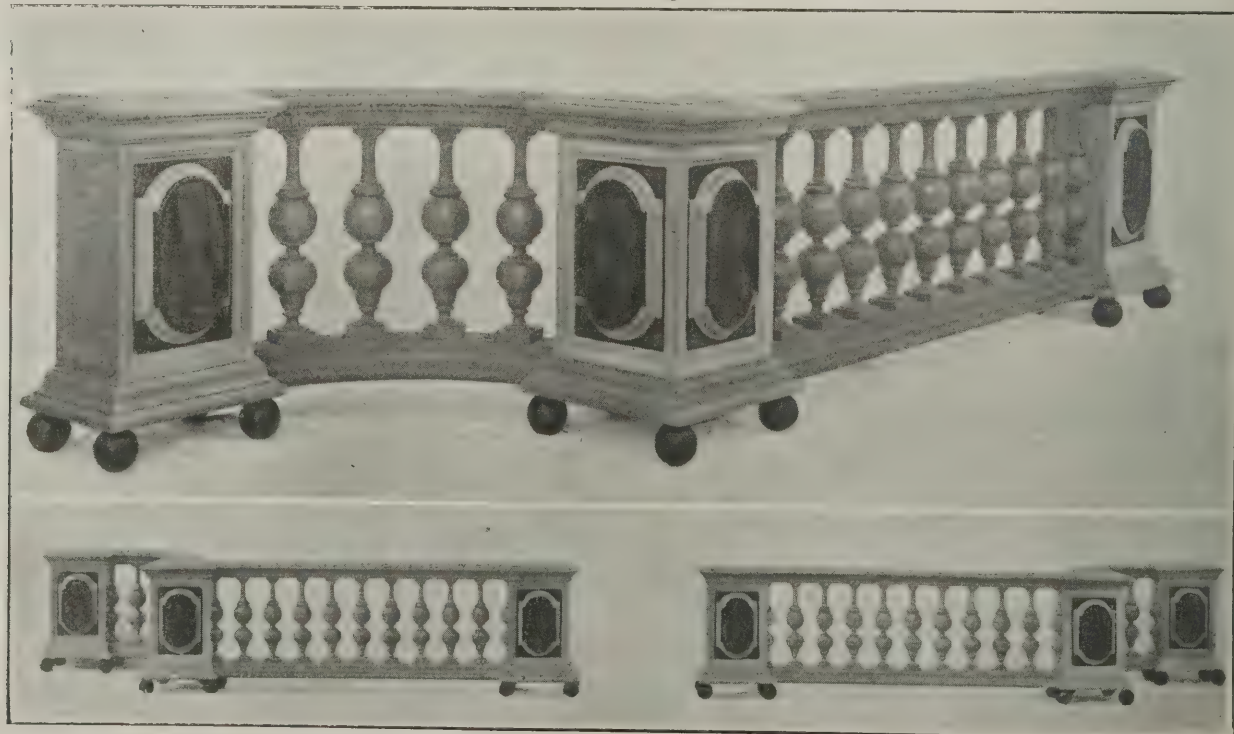
NO fewer than five Bills relating to the preservation of ancient monuments are now before Parliament.

They respectively bear the names of Lord Southwark, Earl Beauchamp, Lord Eversley, Mr. Russell Rea, and Mr. Noel Buxton. Lord Southwark's Bill would "extend the Ancient Monuments Protection Acts, 1882 to 1900"; Earl Beauchamp's would "consolidate and amend the law relating to ancient monuments"; and Lord Eversley's aim is "to amend the Ancient Monuments Protection Acts, 1882 to 1900, and further to protect ancient monuments." These Bills are now before us, but the others apparently are not yet printed. Lord Southwark's Bill provides for the constitution of an Ancient Monuments Board, to consist of not more than twelve and not less than five persons to be appointed by the Commissioners of Works. The membership is to include the inspector of monuments under the Act of 1882; one member each to be nominated by the trustees of the British Museum, the Society of Antiquaries, the Royal Institute of British Architects, the Ecclesiastical Commissioners, the National Trust for Places of Historic Interest; and a member of the county council or corporation in whose jurisdiction the monument under consideration is situated. The duty of the Board will be to advise the Commissioners of Works with reference to any question arising under the proposed Act. Every owner of a monument, when he proposes to sell, destroy, alter structurally, or add to or part with possession of a monument, must give the Commissioners of Works at least two months' previous notice of his intention, and obtain their consent in writing. The Commissioners of Works

may assume guardianship of a monument that is liable through neglect to become ruinous; or, if they see occasion, may have power to acquire the ownership, in which case the price may be settled either by agreement or by arbitration under the Lands Clauses Acts. The two other Bills that have been mentioned are similar in principle, but show greater elaboration of detail. In Earl Beauchamp's Bill provision is made for public access to monuments, and for punishing persons who deface them; and any county council may acquire guardianship of an ancient monument or may, at the request of the owner, undertake or contribute towards its maintenance. Lord Eversley's Bill proposes an Ancient Monuments Advisory Board, which shall exercise such functions as the Commissioners of Works may direct. The essential principle of the Bill is that it would render the owner of an ancient monument liable to penalties for injury or defacement, and would make compulsory the permissive force of the Ancient Monuments Acts of 1881-1900. "It is thought that prehistoric monuments or ruined abbeys or castles ought to be preserved and that the right of property in them should not include the right to destroy, remove, or injure them." Earl Beauchamp's Bill is of course a Government measure.

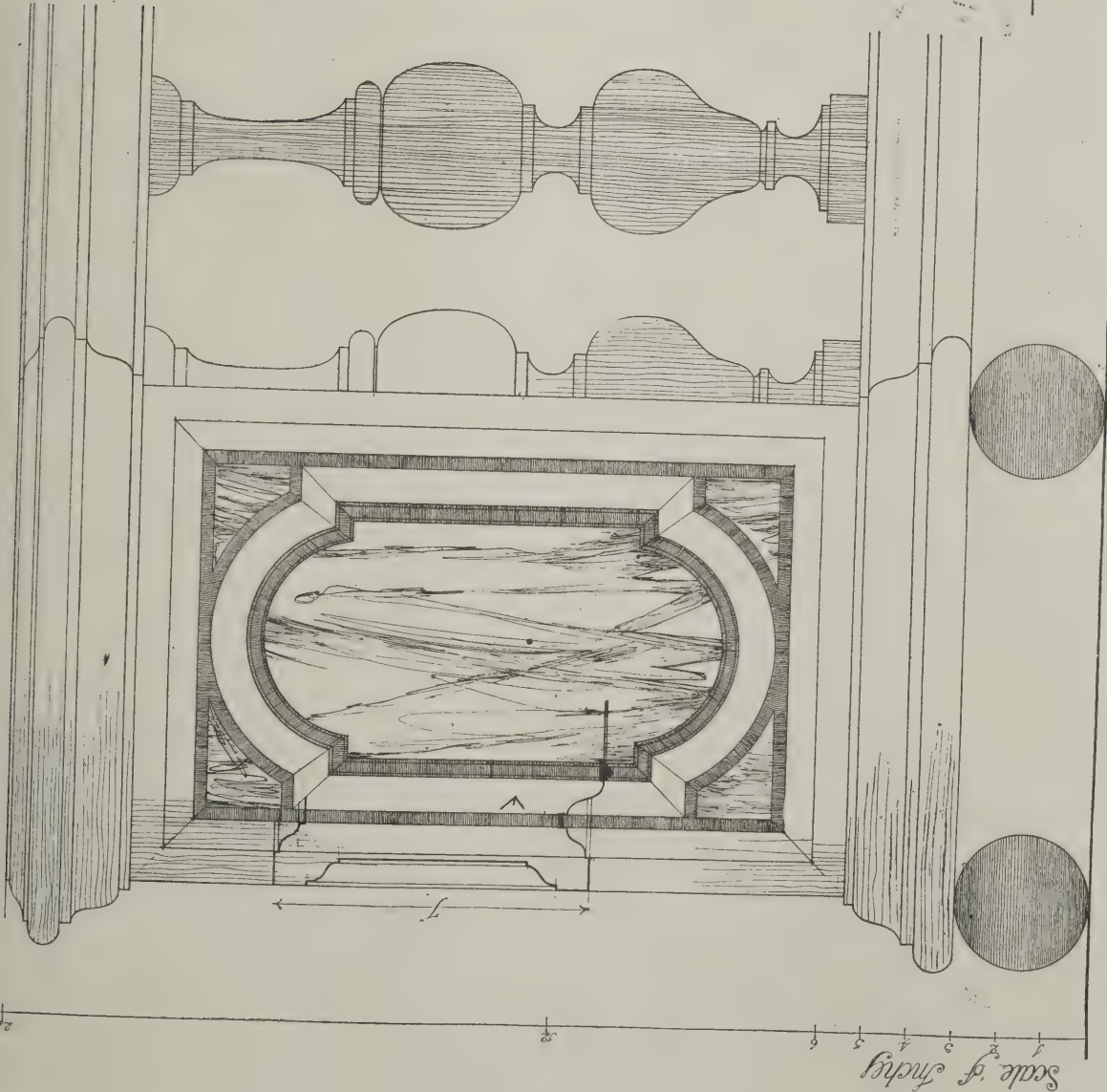
Architectural Drawing.

THE paper read by Mr. Townsend on the drawing which are in the Institute Library was a valuable summary of its contents in this department, accentuated by the numerous illustrations thrown on the screen and we are glad to find it printed in the R.I.B.A. journal; but we cannot at all agree with the President in his remark at the close of the discussion, that the younger students of the day, if they examined these drawings, would have to admit "that present-day draughtsmanship does not compare at all favourably with that of the men of former generations." On the contrary, with the exception of one or two remarkable drawings, such as Goldicutt's section of St. Peter's, we were rather struck with the poor style of many of the old drawings exhibited. Architectural draughtsmanship, whatever it may be worth in itself, has seldom been better than it is at the present moment; and we should surmise that there were men in the room on that occasion who could produce better architectural drawings than most of those exhibited as illustrations to Mr. Townsend's paper.

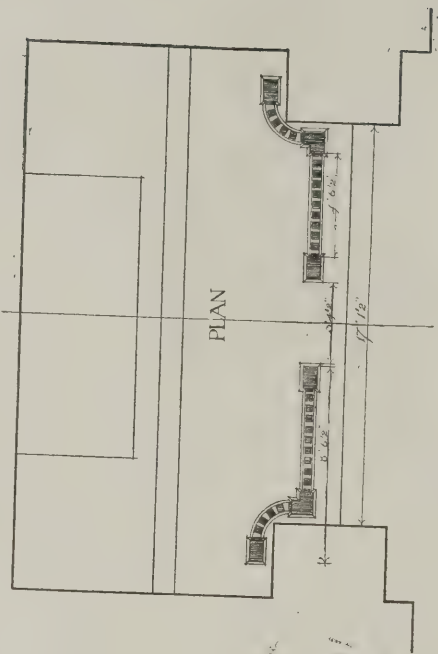


NEW ALTAR RAILS, ST. CHAD'S CHURCH, SHREWSBURY. MERVYN E. MACARTNEY, F.R.I.B.A., F.S.A., ARCHITECT.

ALTAR RAILS
for St. Chad's Church
SHREWSBURY ~ ~ ~ ~



ELEVATION.



PLAN

Scale of feet.

W. Godfrey Allen, del.

MERVYN E. MACARTNEY, F.R.I.B.A., F.S.A., ARCHITECT.

The altar rail and the balusters are of oak; the panels, and the balls on which the pedestals rest, being of ebony. Coromandel is introduced as an inlay.

FIRE PREVENTION NOTES.

Having for years past stood almost alone in London's "Luck." constant insistence on the necessity for educating the public with reference to fire-prevention methods, we are the more gratified to find that this point has not been overlooked in a paper by Mr. Lawrence H. Fryer which was awarded a prize in the Insurance Institute of London competitions. "There are," he observes, "many old buildings in London, and the city is to a degree congested. Its comparative good luck in the past is not an adequate guide to the future. San Francisco's record was excellent. For twenty-five years before the conflagration in 1906, the loss ratio was well under 30 per cent. Bearing this in mind, and remembering that any day may see a disaster at home, should aid us to see that every opportunity is used to educate the public respecting the advantage of building their structures to resist fire, and to advance by all means the use of fire-retarding materials." Nowadays the public accept fires in very much the same spirit of hopeless fatalism in which, in pre-hygienic days, they accepted epidemics of disease, which were accepted as an inexplicable visitation, measures of prevention being regarded as futile if not presumptuous. In the matter of fire-prevention we have hardly advanced beyond the ignorance that merges in superstition. The keen advocate of fire-prevention methods is too often met with the objections (1) that fires are sure to occur in spite of all that can be done; (2) that it is useless to build and equip on fire-prevention lines in the midst of buildings in which these precautions are disregarded; and (3) that the average architect does not know enough about fire-preventing construction to do more than increase the cost of a building without materially improving its fire-resistance.

The Apathy of Architects. With regard to (1) it is certainly true that fires, like disease, will probably continue to occur as long as the sun gives forth light and heat; at the same time it is as possible to minimise the probability and extent of fire as it is to reduce the incidence of disease and the mortality from it, and, in the one case as in the other, it is a plain duty to take all possible steps towards securing comparative immunity from danger and death. (2) To say that one is absolved from doing his duty because of the defection of his neighbours is to argue in a vicious circle; and the prevalence of this excuse is strongly suggestive of the need for all-round compulsion, which would very effectually dispose of (3) the reluctance of the average architect to acquaint himself with the ways and means of doing what is required for safety. The apathy of the average architect is but the reflex of the indifference of the general public, who, so far as educational effort is concerned, are left almost completely without guidance or stimulus; for although fire-drill in schools is now almost universal, that, after all, is an approach from the wrong side, and rather tends to foster the inveterate notion that all that need be known about fire is not how to prevent it, but how to get away from it. Unfortunately, however, the lesson that prevention is better than cure is one that is always exceedingly difficult of enforcement.

Inadequate Publicity.

One reason why architects and the general public are so ill-informed as to the means of fire-prevention is to be found in the ineptitude of many of the vendors of fire-prevention goods, who, with inexplicable modesty, refrain from taking due advantage of the ordinary channels of publicity. It is absurd that these tradesmen should so often require to be tracked to their lairs; yet it frequently happens that we are asked by architects and others to supply the names and addresses of the manufacturers or vendors of fire-prevention specialities which deserve to be much better known. We are always glad to be of service by supplying any desired information of a technical character, yet cannot shut our eyes to the fact that due advertisement would, and ought to, save our correspondents and ourselves thus much of gratuitous labour. It is very clear, however, that most people will not go to the trouble of making such enquiries. To avoid it, as well as the consequent delay, they abandon any attempt to hunt out the particular object that suggests itself as being most suitable for the work in hand, and prefer to adopt something similar which the vendors have had the good sense to keep in evidence by means of advertisement. The moral is of general application, but applies with special force to the materials of fire-prevention, which, on the whole, suffer very severely for want of adequate publicity.

Fires at Country Mansions.

During April there was almost an epidemic of fires in mansions. On April 5th, Lake House, about seven miles from Salisbury, was completely destroyed, to the great regret of all who are aware that in this way another Elizabethan interior has disappeared. The walls, which are of flint and stone, are left standing, but the interior, with its fine old roof-beams, paneling, and chimney-pieces, is beyond redemption. As usual, the outbreak has been attributed to the firing of a beam in a flue, but, for aught that has as yet appeared, this may be an unwarrantable inference. A day earlier, a fire occurred at Gibbstown Castle, Co. Meath. The damage was estimated at £40,000; the motor-engines which extinguished the fire coming from Dublin, a distance of thirty-six miles, in little more than an hour. The castle was built in 1870, at a cost of £200,000. On April 5th damage amounting to many thousands of pounds was done to Rosslu House, the seat of Sir Ian Colquhoun of Luss, at Loch Lomond. The north wing, in the drawing-room of which the fire is believed to have originated, was completely destroyed. The building was erected about 1774.

A Month's Disasters.

Thus, in the short space of three days important mansions in England, Ireland, and Scotland suffered severely from fire. This, unfortunately, does not end the tale of the month's disasters. On April 11th, considerable damage was done to Inglewood House, Kintbury, near Hungerford, by a fire that broke out in the cellars; and on April 25th there was a fire at Clumber House, the residence of the Duke of Newcastle. The damage, which was confined to the west wing of the building, was estimated at £8,000. During the month there were also several serious fires at workshop and other business premises.

A great fire at Ipswich involved the destruction of a furniture establishment, a bicycle factory, a leather-merchants' and an hotel, the damage being estimated at £100,000. A shipyard fire occurred at Middlesbrough, with damage estimated as exceeding £20,000; and five lives were lost in fires which broke out at minor premises in London.

Wanted, a Commission on Fire Prevention.

These calamities enforce the moral which must be insisted upon even to weariness—that is that something should be done to awaken the national consciousness from its strange lethargy with regard to fire prevention, and to the protection of life and property from fire. During last week an interim report reminded us of the existence of a Departmental Committee on Tuberculosis. Setting aside as unnecessary any attempt to assess the relative importance of disease prevention and fire prevention, we yet feel justified in claiming that the many deaths and other disastrous consequences resulting from fires—the huge money loss being perhaps outweighed by the irretrievable loss of venerable buildings and of their sometimes priceless artistic or historical treasures—and the appalling possibility of a calamity in London comparable in magnitude to that which reduced Chicago to ashes, warrant the demand for a Parliamentary Commission to enquire into all the circumstances of fire prevention, fire extinction, escape from fire, and the organisation of fire-fighting forces. The report of such a commission, we feel sure, would be little short of sensational in its revelations.

BUILDING CONSTRUCTION AND FIRE HAZARD.*

If we start with the axiom that "anything will burn, given the necessary conditions," we shall not be guilty of the error, so often perpetrated, of calling any building "fireproof." There is no such thing as a "fireproof" building, so we will content ourselves with calling the best "fire-retarding."

Conflagrations are best avoided in the manner of construction of new buildings and the improvement of the old. A great deal may be done in reducing the fire hazard in buildings by regulating their construction under suitable by-laws, but far more important is a constant supervision of building work and of the framing of by-laws relating to it by those interested in the prevention of fire.

It is often difficult to induce the occupant of a building to take the necessary precautions to prevent setting fire to his neighbours' property by efficient separation or protection of openings, yet, if he would reflect for a moment, he would see that the same protection holds good for his own building from the risk of fire from his neighbour's property, and whereas he is only one, his neighbours are many, and his own risk of exposure much greater. In existing buildings which cannot be called fire-retarding, the risk of fire spreading is greater than in new buildings, and so far as possible they should be constantly improved. Timber in or near chimneys and hearths should be removed or protected with cement, and particular care be taken that the walls of chimneys are not rendered less secure. It has

*Extracts from a prize paper by Mr. Lawrence H. Fryer in the Insurance Institute of London Competitions, 1911.

occurred, in making a cupboard in proximity to a flue, that the enclosing wall has been made thinner to add to the space in the cupboard, a wooden lining being put in, and this attached to wooden stops in the flue wall. Where stops are required in walls, particularly in party walls, to which joists or other woodwork are nailed, they should be made of fireclay. These blocks are capable of receiving and holding nails quite as effectively as wood. Trimmer arches in hearths should be inspected in repairing a building, and wooden floor joists not allowed to approach within a reasonable distance of the fireplace. Wood linings and partitions, where necessary, should be treated with some fireproofing material, preferably some cyanide solution. This is obtainable in all coloured paints, and as wood stain, and is undoubtedly retardant to the combustion of wood and textile fabrics. One of its most valuable uses is for the stage fittings of a theatre. The London County Council require scenery to be treated with some such solution to conform with their by-laws.

Linings in boiler-houses, in storerooms, in corn mills, and in any compartment in a manufactory where heat is generated, should be made of fire-resisting materials, such as uralite, asbestos, or other mineral composition. Similar materials should be used for drying rooms in laundries, breweries, maltings, sawmills, hat factories, tanneries, and others where goods in various stages of manufacture or process have to be dried or conditioned. Both boiler-houses and drying rooms should be isolated from the remainder of the premises by protecting all openings with fire-resisting doors. Concealed spaces should be avoided as far as possible, so that a fire may not spread unseen. If they exist in floors, they can be remedied by filling in with pugging, consisting of cement, silicated cotton, and hair. If they are made in floors or walls for pipes, ducts, or conveyors of any kind, the holes should be of no greater size than to admit the pipes, etc., and should fit close round them. In the case of conveyors or ducts, these should be made of metal, and have a metal shutter on each side of the opening in floor or wall. Holes for shafting should have a metal shield fitting close round the shaft. Hoists and lifts should be cut off from the main building by fire-resisting doors, and the enclosing walls of the lift or hoist should be increased in height above the roof of the main building.

The external hazard consists of the exposure to fire of one building from another, or of one storey from another, by means of openings in walls and roofs. This feature of risk is perhaps greatest in those cases where the buildings are for warehouse purposes. Such buildings are usually large, and require much daylight; and three or four warehouses enclose a hole into which windows look from all sides. In London, where building regulations are more strict than in provincial towns, the warehouses are mostly brick or stone, but many streets are so narrow, compared with the height of the buildings. In Manchester and Glasgow the areas allotted to warehouses are generally wider streets, but the buildings themselves are of inferior quality, and timber entering into their construction. Skylights and other roof lights are frequent causes of the spread of fire. The spread of the Cripplegate conflagration is attributed mainly to these.

Iron and metal-covered shutters, wire mesh, electro-copper glazing, wired glass,

and drenchers are the chief methods of protecting external openings; of these electro-copper glazing should be placed first, with wired glass as a cheaper substitute, of almost equal merit. They will not easily break under heat; the glass may crack, but will not fall away; the metal will not corrode nor rust under natural influences or fumes, and concussion will not seriously damage them. If metal shutters be used, they should conform to the specification of the fire offices, and the work of making and fixing them be entrusted to competent firms. The same stipulation applies to wired glass and electro-copper glazing. Particular care should be taken that they are fixed in metal frames, and that no solder is used.

For the protection of internal openings Messrs. Mather and Platt construct armoured doors of both folding and sliding types, which are fitted with an ingenious apparatus for closing automatically. In the case of sliding doors they are hung on an inclined rail, and when open are held back by a weight on a rope running over a pulley. In the rope is a piece of fusible metal, which melts at a certain temperature and releases the weight. The door then slides into place by gravity. It should be possible to find some mechanical means by which all window and door openings could be closed by one action from a point outside the building on the ground floor.

In turning to the subject of new buildings reference must be made to one point in the London Building Acts. In the London County Council by-laws, made in conformity with these Acts, the following materials are given for use in staircases—viz., "York or other stone, or fire-resisting materials, to be approved by the Council." Why should stone be particularly mentioned, especially in conjunction with "fire-resisting materials"? Stone when heated to a high temperature and submitted to the influence of water will crack and fly about, and be rendered very unstable. In fact, a strong oak or teak staircase will not burn through at the same temperature as will render stone unsafe, and the application of water to wood when at a high temperature will not cause it to disintegrate like stone. The difference in the behaviour of brick, terracotta, concrete, and cement when submitted to fire and water is so wide that it would appear expedient to make some distinction in their use. Brickwork and concrete might be classified as almost equally efficient both for walls and for covering metal work. Cement alone is not so reliable in resisting heat. Plaster is weaker still, for it will very soon disintegrate under the combined influences of fire and water. Terra-cotta is a faulty material for covering structural ironwork, owing to the difference in the ratio of expansion between the two materials.

In putting up a fire-resisting building, the chief considerations are—(1) resistance to heat and to combined influence of heat and water; (2) compressive and tensile strength in resisting abnormal strain; (3) water-tightness; (4) conductivity; (5) resistance to deterioration from natural influences and wear and tear. The first consideration is obvious. By the combined influence of heat and water is meant the liability of a substance to expand and contract under quick changes of temperature. The second consideration is important in view of the risk of materials of great weight falling during the progress of a fire. Water-tightness must be considered in some buildings with a view of preventing loss to goods which may be affected by water. Conductivity, though

seldom given sufficient thought, is very important in warehouses, dry goods stores, etc., where large stocks of inflammable goods may be piled up against walls, through which sufficient heat to set them alight may be conducted from a fire on the other side, while the fire may not be sufficient to penetrate.

Deterioration of a building material may weaken it so much as to allow a fire to work from point to point where it was least expected. In the earlier forms of fire-resisting construction—viz., unprotected metal and masonry—none of these requirements can be said to have been complied with. Indeed, the behaviour of unprotected or insufficiently protected metal work, when subjected to the influences of fire and water, has been demonstrated, and the lesson reiterated so often that it seems superfluous again to mention it.

The developments in the use of metal and concrete have not been rapid, but now that so much more is known of the qualities of concrete, its manufacture has become a science in itself, and the better standard attained in it makes the scope of its uses far wider, irrespective of the fact that it is one of the finest fire resisters known. Of Roman structures, e.g. the Pantheon in Rome was built of lime concrete 2,000 years ago, and Portland cement concrete is admitted to be superior to lime concrete. Reading Abbey had a concrete core and stone facing. The stone has crumbled away with age, but the concrete remains. The water-tightness of concrete may well be illustrated by the following occurrence, in spite of statements that with age concrete loses this quality. A fire occurred in a reinforced-concrete cotton spinning mill at Fives Lilles in 1907 (the mill had been built eleven years before). The fire was confined to the upper storey in which it broke out, and the damage done was to the goods and machinery on that floor, which were destroyed. The water-tightness of the floor prevented damage to goods and machinery in the lower floors, and the mill, with the exception of the floor on which the fire broke out, was working three days after. The hardness and impenetrability of concrete will prevent rats and mice and other vermin from making holes and runs in a building constructed of it. These holes are known causes of the spread of fire.

The kind and size of the aggregate used in mixing concrete is important. If it consists of large stones, its stability is threatened in case of fire by these stones cracking and disintegrating the concrete. Cinder as the aggregate in concrete is not satisfactory. Its resistance to fire is very small, so much so that it has been known to catch fire. The Prussian Government have prohibited the use of coal residues in concrete or reinforced-concrete floors. The lessons to be learnt from the San Francisco fire, the biggest conflagration on record, are numerous. Many buildings there had cinder concrete in their construction, and the results were most unsatisfactory. Captain Sewel, U.S. Corps of Engineers, spoke in strong terms of the deficiencies of this form of concrete, and in one case the floors of the building constructed of cinder concrete supported by unprotected iron columns were practically ruined, although the heat was not sufficient to affect the bare ironwork.

The difference in expansion of terracotta and iron is said to be the cause of the failure of so many buildings in Baltimore. Many buildings were constructed on the principle of metal frames protected by terra-cotta, and its behaviour was similar to that in San Francisco.

The floors of the Civil Service Stores in Haymarket were built on Messrs. Dennett and Ingle's principle in 1881, and they appear to have acted very well in the two fires which occurred there, one soon after their construction and another in 1903. In each case the fire was confined to the floor on which it broke out, and in the latter case the heat generated in the packing room, where the fire originated, was intense, owing to the inflammable nature of the goods that were stored there. These were quite destroyed.

Reinforced-concrete construction, from the comparatively few recorded instances of its behaviour in fire, can apparently claim to possess the requisite qualities of a first-rate fire-resisting material.

With the march of civilisation in the mechanical appliances for saving labour and time, in the manifold uses of electricity, in the height of buildings, their size, number of occupants, etc., we are constantly increasing the opportunities for the outbreak of fire. But against this we have the increase in knowledge of fire resistance and scientific research, and we can best apply this knowledge in endeavouring to confine a fire to its origin, in preventing its spread from room to room and from building to building, and so securing the greatest degree of safety for inmates. The construction of a building on sound fire-retarding principles is the key to this, and proper supervision during the process will attain the best results.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Victoria Tower Garden.

In the House of Commons, Captain Murray asked Mr. Wedgwood Benn, representing the First Commissioner of Works, whether he could give an approximate date for the completion of the garden which was to be laid out on the site now being cleared in Millbank Street; whether plans had yet been prepared showing the dimensions of the garden and the manner in which it was to be laid out; and whether he had any other information to give to the House in the matter.

Mr. Benn, in reply, said the plan for laying out the Victoria Tower Garden, as enlarged, was now under consideration. The First Commissioner could not say when the work would be finished, but it was not likely to be before the summer of next year. He proposed to put the plans, when they were completed, in the Tea Room for the inspection and approval of members. It had been suggested to him that he should provide a site in the garden for the group of statuary by Rodin known as the Burghers of Calais.

In reply to Captain Jessel, Mr. Benn stated that it was the intention of the First Commissioner to lay down wood-paving instead of macadam in the portions of Abingdon Street and St. Margaret Street which were under his control.

Museum of Safety Appliances.

Mr. McKenna has informed Mr. Wardle that the Government have decided to establish a museum of safety appliances, and the arrangements are now in hand. The selection of the site has taken a little time, but the offer of a suitable site in a central position in Westminster has now been accepted, and provision has been made in the estimates for commencing the erection of the building in the course of the present year.

Sub-Inspectors of Quarries.

In reply to Mr. H. Jones, who asked

whether the examinations for sub-inspectors of quarries would be conducted by a gentleman having a practical knowledge of slate quarrying, Mr. McKenna said the examinations were conducted by the Civil Service Commissioners, but he was informed by them that the technical portion of the examination was in the hands of well-qualified experts.

King Edward Memorial.

Mr. Asquith, answering Colonel Yate, said an opportunity would be given the House of recording its opinion on the proposed memorial to King Edward VII. in the Green Park on the vote for the Office of Works, which would be taken at an early date.

Rates upon Land Value.

A Bill which has been brought in by Mr. Neilson, and read a first time, enables local authorities to relieve ratepayers from paying rates in respect of buildings and fixed plant and improvements, and to adopt land value as the standard of rating. The Bill has very little chance of again being heard of this session.

Peter Pan.

In the House of Commons, Mr. France asked Mr. Benn, as representing the First Commissioner of Works, in view of the fact that consent had been given for the erection of a statue to Peter Pan in Kensington Gardens, if he was prepared to accept offers from other authors, from actor managers, or from business firms for the erection of statues to commemorate and to increase the fame of persons or wares in which they and the public were deeply interested. Mr. Benn replied that the First Commissioner had already promised not to authorise the erection of any more statues in the Royal Parks without consulting Parliament.

Office of Works Architectural Assistants.

Mr. Snowden inquired whether any decision had been arrived at in regard to placing the class known as architectural assistants engaged in the Office of Works upon the established list whether the undertaking given on the 7th December last that the wishes of all the men in this class in regard to their desire to be established would be ascertained, had been carried out; and if any scheme had been prepared, whether he would state the nature of the proposals made.

Mr. Benn said the scheme had been submitted to the Lords Commissioners of his Majesty's Treasury, which provided for the establishment of a staff of permanent architectural draughtsmen and technical assistants the architects.

Protection of Ancient Monuments.

Three of the Ancient Monuments Protection Bills, now before Parliament—namely, those introduced by Earl Beauchamp (First Commissioner of Works), Lord Southwark, and Lord Eversley—have been read a second time and referred to a joint committee of both Houses. This committee will probably hear evidence after Whitsuntide. Bills dealing with the same question have also been introduced in the House of Commons by Mr. Russell Rea and Mr. Noel Buxton.

New Imperial Institute Building.

Mr. Radford asked Mr. Benn whether a new building was being erected on a portion of the site occupied by the University of London and the Imperial Institute, known as the North-East Quadrangle; and if so, for what purpose the building was to be used, and would it be open to the public. Mr. Benn replied that the building was being erected by and at the cost of the Imperial Institute in one of the quadrangles which had not been appropriated to either body

exclusively. With regard to the last two questions he referred Mr. Radford to the Colonial Secretary.

Cork Post Office.

Mr. Augustine Roche asked the Postmaster-General if he would explain the cause of the delay in proceeding with the enlargement of the post office buildings in the city of Cork, having regard to the fact that the plans of the proposed improvements were lodged with the city engineer in 1911; and whether he could now state when the works would be commenced.

Mr. H. Samuel stated that it had been necessary to reconsider the original proposals for improving the accommodation at the Cork Post Office. A revised scheme which did not involve the purchase of additional property had now been authorised, and provision had been made for commencing the work during the current financial year.

A Trade Protest.

In reply to a question by Mr. Tyson Wilson, Mr. Churchill stated that a portion of a glazed partition in No. 15 Storehouse was taken down and re-erected by skilled labourers in order to change the position of the doorway. The work of the removal and re-erection, using the same fittings and glass, was considered such as might be reasonably be performed by the skilled labourers who were employed on it.

Town Planning in London.

Sir Arthur Griffith-Boscawen asked the President of the Local Government Board whether he could state what steps had been taken under Part II. of the Housing and Town Planning Act, 1909, by any of the local authorities of London and of what was termed greater London; and whether, in view of the tendency of the population to move outwards and the desirability of encouraging this tendency, and in view also of the great multiplicity of authorities in greater London, he would consider the possibility of forming a housing and town-planning board to embrace the county of London and the districts outside with a view to attaining uniformity and consistency in the planning of these new districts.

Mr. John Burns, in a printed reply stated: The London County Council are the only local authority in the administrative county of London under Part II. of the Housing and Town Planning Act, 1909, but I am not aware that any steps have been taken by the council with a view to the preparation of any town-planning schemes.

As regards districts in the immediate vicinity of London, Ruislip-Northwood and Hanwell have received authority to prepare schemes, Walthamstow has made application for such authority, and Enfield, Southgate, Finchley, East Barnet, Hendon, Willesden, Wembley, Bushey, Greenford, Hayes, Southall-Norwood, Acton, Twickenham, Barnes, Richmond, Ham, Esher and the Dittons, Surbiton, Maldens and Coombe, Merton, Epsom, Epsom Rural, Sutton, Carshalton, Croydon, Croydon Rural, and Beckenham have all taken some steps in the matter and many of these authorities have been in consultation and co-operation with one another. On the information before me, I should not be disposed to regard the formation of a housing and town-planning board for greater London as desirable but I should agree that in certain matters there should be consultation and co-operation between the local authorities and I should expect the London County Council to take a leading part in securing it.



LOVE AND THE VESTAL. S. NICHOLSON BABB. SCULPTOR.

(Royal Academy Exhibition, 1912.)

LIBRARY
OF THE
UNIVERSITY OF ALABAMA

CORRESPONDENCE.

The Housing Problem in London.
To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your issue of April 24th, the contributor of a note under the above heading suggests that the writer of the "Times" articles and I are both shutting our eyes to facts in suggesting that districts may be developed so as to be occupied by different classes of people; but is not your contributor drawing arguments from a degree of intermixture of houses which has not been suggested, and allowing these arguments to influence him in discouraging another degree of intermixture to which in reality his arguments do not apply?

The great evil, which every effort should be made to avoid, is the aggregation into different suburbs of a town of very large numbers of people exclusively belonging to one class, whether that class be the working, the middle, or the upper class. This I believe can be avoided by the careful planning of the district, allotting certain areas to different classes—areas which, for one reason or another, are specially suited for that class. There is already sufficient evidence up and down the country to prove that this is not only practicable, but that it is not in any way objected to by any of the classes provided for.

The arguments which your contributor suggests as bearing on the matter really only apply to an attempt to mix up indiscriminately different classes of people in such a way that their difference of habit and life, their difference in tastes, and so forth, would be constantly causing friction. This degree of intermixture, however desirable it might be from a sociological point of view, is not suggested by any of us as being at present practicable. It seems a pity to accept tamely as inevitable a segregation of classes into different suburbs which has sprung from definite causes that are being and can be removed. One of those causes is undoubtedly the squalid appearance of the ordinary lower-class suburban district, with its entire lack of amenity, due to the overcrowding of the houses on the land, and the absence of all attempt to make the streets pleasant for passers-by.

Where the cottage areas of a district are built with as much attention to general amenity of arrangement and building, and with as generous provision of open spaces as is devoted to the villa areas, it will be found that the two areas can be planned in close proximity to one another with considerable mutual advantage, and without any deterioration in the value of the larger houses. Surely, to the degree that this is possible, everybody will admit that this is desirable.

RAYMOND UNWIN.

Hampstead, N.W.
The American Frame House.
To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I was much interested in the article which appeared in your journal dated March 20th on "Cheap Cottages," and the reference therein to frame construction, and it occurred to me that a short description of the American frame house might be of interest to your readers.

In Western Canada frame construction is very largely adopted for houses and larger buildings of all kinds—banks,

churches, stores, etc. It is the cheapest and quickest form of construction, and makes a satisfactory building from all points of view.

The process of building a cheap frame house in Western Canada is as follows:—The basement is excavated for to the full extent of the house, as the furnace and piping require considerable space. The external walls up to ground floor (which is kept about 3 ft. 6 in. above ground-line) are built (around Winnipeg) of local rubble limestone, 16 in. to 18 in. thick, and on top of the wall is placed a plate 2 in. by 4 in., halved at angles, and bedded in mortar. This plate receives the joists, which are spiked to it, and the ends are carefully beam filled to keep out the cold. Then a rough floor is laid diagonally over the whole house, which is then ready for the frame walls. These are built of 2 in. by 4 in. uprights 16 in. apart, and a whole side of the house is framed-up on the ground and hoisted into position. The sections are spiked together, and the roof rafters fixed. Openings for windows and doors are cut out later.

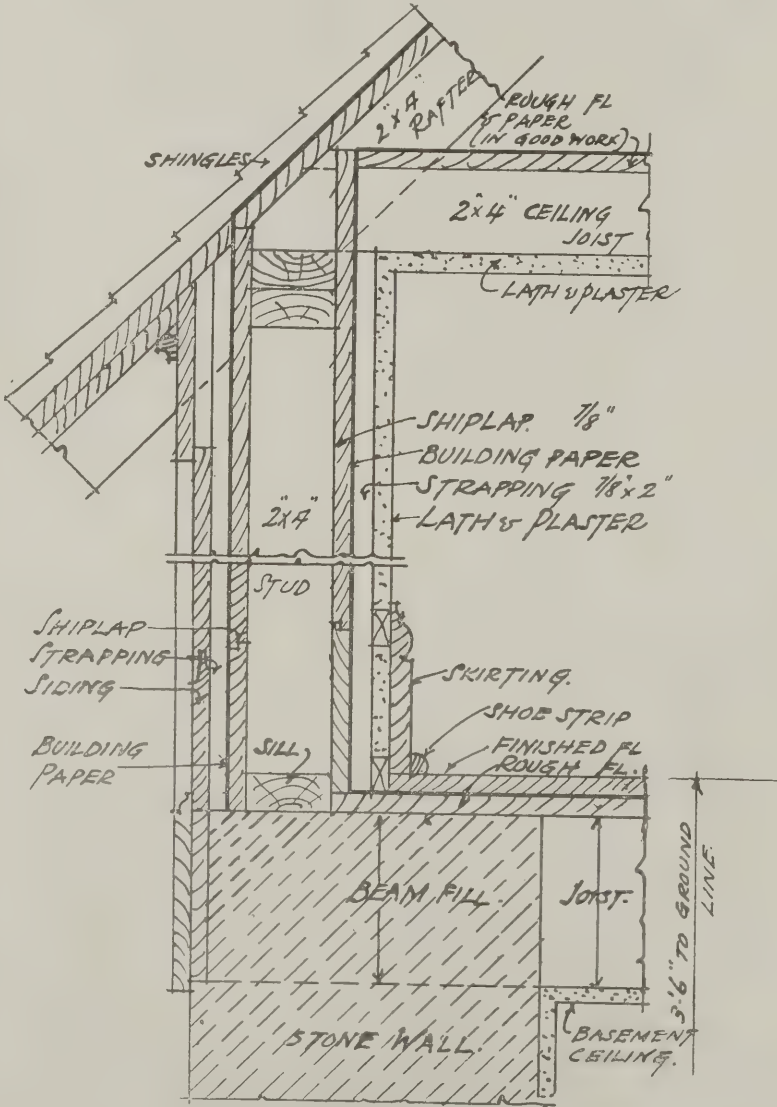
The whole of the walls and roof are then covered with $\frac{7}{8}$ in. rebated boards,

known as shiplap; the rafters are generally cut off square with the walls, to allow of a good weathertight job being made of the papering at the eaves. The walls and roof are covered with very thick tarred paper, securely lapped at the joints and held in place with $\frac{7}{8}$ in. by $1\frac{3}{4}$ in. strapping, which also receives the finishing lumber, which may be siding as shown in the diagram, or shingles.

The short rafters forming the projection of the eaves are nailed on over the paper, which thus removes the difficulty of fitting the paper around them.

The inside of the house next receives attention; a layer of shiplap is first nailed to the studding, then building paper, and finally strapping to receive the lath-and-plaster.

There is nothing about the framing of a house of this type which cannot be done by anyone able to use a hammer and saw. There is practically no framing in the building, all joints being secured with wire nails; and this is all that is necessary, for the double boarding does all the bracing required. A house of this description, with the addition of double windows and doors, is good enough to keep out the high winds prevalent in this



SECTION AT SILL & EAVES THROUGH WALL OF FRAME HOUSE.
0 3 6 9 12.
INCHES

SECTION SHOWING CONSTRUCTION OF AMERICAN FRAME HOUSE.

district, and the cold, which occasionally reaches 40° below zero Fah., or 72° of frost; and I have never seen dampness come through the walls.

In building a similar house in England, I should think the inside boarding and paper could be omitted; but the outside papering is most important, as it keeps out wind, cold, and rain, and some of the papers used are guaranteed vermin-proof.

The average life of a frame dwelling is from twenty to thirty years, although there are many buildings in Winnipeg which have stood for nearly twice that time. The cost of upkeep is more than with a brick house, as the exterior needs painting every two or three years.

The standard building lot in Winnipeg is 25 ft. by 100 ft., with a lane at the rear, and the small six-roomed house is usually built 20 ft. wide, which leaves 5 ft. between the houses. The number of fires in frame dwellings is remarkably small—electric lighting is universal—but it is easy to see that if a fire did once get a good start on a windy day whole blocks would disappear.

The point I want to emphasise is that it is possible to build a thoroughly warm and sanitary dwelling entirely of wood, and one that will be sufficient to stand even such a range of temperature as we get in Winnipeg—130° F.

ALF. B. SCARLETT, Architect.
Winnipeg, Manitoba.

The Decadence of English Architecture.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—When the work of designing important London buildings is entrusted to foreign architects, it is evident that there is something radically wrong with the architectural profession in England. In the cases we have in mind, it can scarcely be urged that the buildings are of such a special nature as to require the services of foreign architects, in preference to those which one might reasonably expect could be equally well rendered by our fellow-countrymen.

Why, then, have the owners of these buildings thought it advisable to go so far afield for the professional assistance they required? We are afraid the answer must be that the owners have had sufficient discrimination to see that they are likely to obtain a better result by the employment of the foreigner. In other words, it is impossible to obtain the services of English architects who have been equally well trained in the technique of their art. The dearth of highly qualified men in this country is due to our present unsystematic and inefficient mode of architectural training. And so long as we remain without properly organised and properly administered schools of architecture, we may anticipate that the work of the better trained foreign architect will be more and more in evidence in the United Kingdom.

Recognising this fact, it is imperative that the architectural profession should seriously consider what steps can be taken to cope with the difficulty.

It seems to us that following the formulation of a sound and comprehensive scheme of architectural education, the Government should be approached to give its financial support to enable the scheme thus put forward to be realised in its entirety.

We are aware that the British Government rarely, if ever, does anything

in the cause of art; but in this particular case it might be induced to see what foreign countries have long ago realised—namely, the undoubted fact that good architecture is a national asset, and, as such, State assistance to art education has proved a sound financial investment.

But, however good such a scheme may be in theory, and however well endowed, all would go for nothing unless the direction of the students' work were under the absolute control of specially trained men. Handicapped as they have been in the past by the non-existence of any school for the advanced study of their art, the architects of this country cannot be expected to furnish the necessary teachers.

It would seem, therefore, that upon its inauguration a National School of Fine Art would have to rely upon obtaining professors from foreign countries. To those who do not know the details of the system of architectural training which has been carried on so long and successfully in France, the following brief description of the curriculum of study at the Beaux-Arts may be of interest.

After a competitive entrance examination for admission, the student in architecture attends a course of lectures on each of the following subjects:—Mathematics, Descriptive Geometry, Stereotomy, Physics, Chemistry and Geology, Construction, Perspective, Building Regulations, History and Theory of Architecture.

In addition to the foregoing subjects which are specially applicable to the training of architects, it has been wisely felt that as architecture is but one branch of art, it is necessary that its exponents should receive at least some instruction in the sister arts of painting and sculpture.

As the architectural student receives specialised instruction, so in like manner do the painters and sculptors become specialists in their separate arts. But prior to this specialised training, all students of the Ecole des Beaux-Arts, whether painters, sculptors, or architects, are obliged to attend a course of study on Design, Modelling, Elementary Architecture, Literature, and Decorative Design.

By adopting this method of training, painters, sculptors, and architects are taught at an early age to appreciate the merits and necessary limitations of their colleagues' work. The exponents of the three arts thus become accustomed to work together, and it is only by this appropriate application of their united efforts that a homogeneous and thoroughly satisfactory artistic result can be obtained.

To compare the results obtained under this methodical training with those that follow the haphazard system (or want of system) in vogue in this country is not only humiliating and depressing, but shows that our much-vaunted commercial instinct in this instance is disastrously astray.

This is only one aspect of the many problems relative to the welfare of the architectural profession which show the urgent necessity of obtaining statutory powers to enforce a satisfactory system of architectural education.

So long as we are content to see untrained men allowed to practise in this country, just so long will the decadent period of architecture now existent be apparent.

GEORGE HUBBARD,
A. W. S. CROSS.

Shop-Front Architecture.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The article appearing in your issue of April 17th, headed "Regent Street Architecture," overlooks the obvious fact that the man who pays the piper usually calls the tune. There are no "imaginary notions" about the style of shop-front that pays a shopkeeper. It is certain that huge stone piers are absolutely detrimental from a business point of view. The writer of your article is very severe upon shopkeepers as a whole, classing them as vandals and holding up his ideals of "noble and dignified street architecture" as represented by the shop-fronts in the Piccadilly Hotel. He would rout the whole tribe of ignoramuses from their prosperous plate-glass shops, and bundle them neck and crop into a row of railway arches. They must be taught better; they must be taught that their customers come out on fine days to study the street architecture not to go shopping, and that the shopkeeper who can show the nicest display of architectural features and stone wall will do the most business.

London shopkeepers always have controlled London street architectural features and they always will, for the simple reason that they have to find the money to pay for them. The shopkeepers of London have made the streets the gold mines they are to the ground landlords and property-owners, and these gentlemen will always study their own financial interests when erecting shop premises.

Rent-day is the pivot of the question, not a noble vista.

The article argues for a return to mediæval styles in shop windows, and instances a tobacconist's shop with an old-style front. This business is probably one that would do as good trade with no window at all—there are many such in the West End of London—and to drag it into the argument is an irrelevancy. Probably not two per cent. of a tobacconist's customers ever look into the window. When milady goes a-shopping she does not view the shop from afar off; she does not even stand in the centre of the road and take stock of the building; she just goes along with her eyes glued to the plate glass, and is more interested in picking out the particular shade of ribbon she is in search of than in rhapsodising over the architectural treatment of the premises. She votes the stone piers of the railway arch type of shop a plaguy nuisance.

The many weary years some of the Piccadilly Hotel shops stood tenantless proves conclusively that the elevation is unsuitable from a business-bringing point of view. Rental value is not a matter of opinion—it is a matter of fact—hard solid fact. There is a shop, not at all a large place, on offer in Regent Street at the present moment for £6,000 per year rent. At a rough guess this is at the rate of £200 a foot frontage. It would be rather serious to have to pay rent for stone piers, in this proportion, to please æsthetic tastes of folks who do not have to earn the money, and, provided they occasionally get a good eye-full, care little if the shopkeeper (or vandal) gets a living or not.

The shop window is a showcase, and always will be a showcase, because its mission is to get the money. A stone wall is always a stone wall, and wastes valuable frontage. Architectural superiority sounds good, but shopkeepers want

daylight and space, and every inch of the street they can get.

We acknowledge the debt the world owes to Mr. Norman Shaw for the impressiveness and grandeur of his conception, and we are with the writer of the article in wishing for an improvement in the styles of London business premises. But to the latter gentleman we would say that shopkeepers are a very wary lot, and have learned by experience that plate-glass—and plenty of it—draws business. And that the intolerant attitude in the article will not go far to teach them the error of their ways.

E. POLLARD AND CO.

29, Clerkenwell, Road, E.C.

ENQUIRIES ANSWERED.

Town Planning Parties.

IONA writes:—"I wish to make a study of town planning, and should be glad of your advice. During the month of June or July I intend spending a month abroad. Please advise as to suitable countries to visit. Do you know of any parties that I might join?"

—Parties to study town planning are being arranged by the National Housing and Town Planning Council (address Mr. H. R. Aldridge, 18, Dulverton Road, Leicester); also possibly by the Garden City and Town Planning Association (address Mr. E. G. Culpin, 3, Gray's Inn Place, W.C.). The most instructive countries to visit are France and Germany. In France, such towns as Paris and Nancy, for example, should be visited, and in Germany town planning is practised in nearly all the towns.

As to books, read Camillo Sitte in French or German; Stübben in German and in English; also the "Proceedings of the Town Planning Conference," October 1910, obtainable from the R.I.B.A.; "Town Planning in Practice," by Raymond Unwin; "Town Planning," by Inigo Triggs; "The Town Planning Review," issued by the Liverpool University Press, quarterly. R. U.

Sand-faced Rough-Cast.

C. K. T. H. writes:—"There is, I believe, a kind of rough-cast known as 'sand-faced,' being of a less rough texture than the ordinary variety. Kindly give the specification for this."

—Fine rough-cast is executed in a precisely similar manner to the coarser varieties, the pebble-dash being of finer gauge. Specifications of rough-cast have been several times given in this column. Texture is sometimes given to the rendering in Portland cement and sand (1 to 3) by dabbing the floated surface with a wood float covered with coarse sacking or old carpet, or scratching it with a drag. This method gives a better effect, when limestempered, than any more even method. G.

Water on Site.

F. H. H. writes:—"During the erection of a cinematograph theatre, water appears on the site, which causes extra cost in excavating, strengthening the foundations, and pumping; and it is also found necessary to have a layer of asphalt laid on the floor. We may mention that in the agreement there is nothing provided for an emergency such as this, and our contract is to erect the building as based on the plans and specifications. Are the proprietors responsible for the extra cost entailed by the unexpected appearance of the water

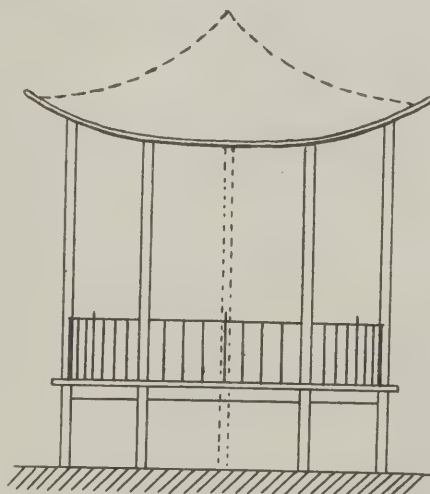
(which is probably caused by a spring or small springs underneath), or is the contractor liable?"

—The information given is insufficient to enable a definite opinion to be expressed. When the water was encountered, the question of liability for the cost of the remedial measures should have been settled before proceeding with the work. It would then have been necessary to prove by the original contract whether the builder was responsible or not, and in the latter case an order for extras should have been required from the proprietors or their architect. If the builder proceeded to remedy the water without taking these precautions, he would appear to have assumed a responsibility from which only a sense of fairness on the part of the proprietor can relieve him. A. G. W.

Band-stand Design: Question of Acoustics.

A CORRESPONDENT writes:—"What constructional points should receive attention in the designing of a band-stand, in order that the acoustics may be satisfactory? The site chosen is an open one, on a mound of earth some 10 or 12 ft. above an esplanade and gardens, where the listeners will principally assemble, although there will probably be a walk around the band-stand on top of the mound for the accommodation of some of the audience."

—The band-stand should be built entirely of wood, with wooden supports for the roof. The floor should be boarded, with some space underneath, which need not be enclosed; better not, in fact; a boarded floor with space under it makes a resonator. The roof should not be in a dome-like form; that catches and retains some of the sound. It should be more like the accompanying sketch; the form



of roof shown keeps the sound down and drives it outwards. For getting rid of the rain from the roof, there would be two methods: either have a false outer roof on the top, as dotted, discharging into a gutter around the sides; or the roof may be left in its cup-like form, leaded on the upper surface, the rain being taken away by a central vertical rain spout (dotted on section), discharging into the gutter beneath the band-stand. The first way would have the better external appearance; the second is the more simple, though the central rain-pipe might be a little in the way, and perhaps the centre position may be thought the best for the conductor of the band. The false roof may therefore be the best, though a little more costly. H. H. S.

Concrete Slab Beneath Floor.

H. T. W. G. writes:—"I wish to build a small two-storey house on a hard sandy foundation. It is my intention to put down a concrete slab 6 in. thick over the site; in other words, to extend the concrete beneath the boarded floors under the footing as well. Please say whether the concrete, having no load, is likely to fracture under the middle of a floor."

—No gain in strength will result from the continuation of the surface concrete beneath floors to form the wall foundations, unless adequately designed reinforcement is added; and even then 6 in. will be thin. Consider the two possible eventualities. If the soil is compressible or likely to shift, the weight of walls transmitted to the outer edge of the slab will throw a cross strain on the concrete as soon as settlement begins, owing to the absence of load beneath the floors, and this strain will result in fracture. If the soil is incompressible, so that there is no tendency to settlement under concentrated loads, the concrete—slab or otherwise—serves no real purpose. G.

Exudation from Pine.

ABIES DOUGLASSII writes:—"I have been using Oregon pine treated with three coats of Carbolineum for the internal joinery of a house, but find that an exudation takes place, apparently of resin, especially where the sun gets upon it. Kindly inform me if the wood can be treated in any way to prevent this."

—I have heard of no other case where Oregon pine has shown serious exudation where used in joinery. Is it certain that either pitch pine or sugar pine was not substituted? Their appearance is not dissimilar. The former is, of course, well known to ferment if coated in any way likely to prevent free evaporation of turpentine, and the latter contains reservoirs of saccharine matter which is likely to produce such an effect as described. It is an American wood scarcely known in this country. I know of no treatment likely to stop the trouble permanently. G.

Reversible Fireplace.

A. O. C. writes:—"I have an indistinct recollection of a patent fireplace which was somehow arranged so that it could be turned round and used in the adjoining room, thus being available in two rooms. I cannot find any advertisement of this fireplace; perhaps you may be able to supply the name of the makers."

—Some time ago a Royal personage, visiting a new block dwelling, expressed the opinion that it would be highly convenient if the living room and parlour fireplaces were so arranged that the fire could be transferred from one apartment to the other when desired. This incident obtained wide publicity in the Press at the time, and we are under the impression that in a later block the experiment was tried, but whether the contrivance is on the market we cannot say. Perhaps the maker will respond to this.

Penalty Clause in Contract.

SUBSCRIBER writes:—"A contract was made under the following conditions: Building to be completed within six weeks, or penalty of £5 to be inflicted for every day exceeding the stipulated time. In making the necessary excavations, water and fibrous matter was encountered, making it necessary to go

considerably below the footings originally shown on the plan. This work was charged as an extra and accepted by the proprietor as such. Would this cause the contract to be broken? Two weeks' bad weather was experienced, and the excavations involved $8\frac{1}{2}$ weeks over contract time. There was no signed stamped agreement."

—The exchange of a tender and an acceptance constitutes a contract; the fact that it has not been stamped, however, may involve the party who sues under it in trouble with the Inland Revenue. The fact that the proprietors accepted an extra charge for extra work to foundations probably vitiates the penalty wholly or in part, but it will be a question of fact depending on the circumstances whether and how far this was so.

A. G. W.

Action of Frost on Mortar.

R. I. (Mussoorie) writes:—"Kindly give your opinion on the action of frost

on lime mortar. Is it mechanical or chemical, or a combination of both? I ask this question as I find that lime mortar, after it has been exposed to the action of frost, becomes absolutely inert, and resembles a mixture of sand and ashes. This would not be the case if the action of frost were only mechanical."

—The true inwardness of the setting of mortar has never yet been satisfactorily explained. It is often assumed that intermolecular penetration takes place between the particles of lime and the sand or other aggregate to which it adheres, forming a silicate-of-lime cement between them, but this, so far as I am aware, has not been proved. In this state of knowledge it is difficult to define the precise action of frost on lime mortar. What is certain is that frost swelling the moisture in the mortar arrests the process of crystallisation, and causes internal disruption of the mass, and that the setting process thus arrested is not resumed—an explanation which appears to depend on mechanical action.

G.

Effect of Heat on Mortar.

W. W. (London) writes:—"What is the effect of great heat on bricks laid in (1) lime mortar, and (2) cement mortar?"

—The effect of great heat on lime mortar and on cement depends entirely on the duration of exposure and the temperature. Momentary exposure to the most intense heat will only effect a partial fusion of the material, which will tend to increase rather than diminish strength as a binder. If, however, the exposure is prolonged, even at a relatively low temperature, the tendency will be to dehydrate the lime or cement, destroying the bonding power and reducing the cement or mortar to a more or less loose friable mass.

It is extremely difficult to ascertain precisely the effect of a fire on brickwork for the exterior of the mortar may appear to be quite sound on account of a superficial partial fusion, whilst the interior has been robbed of its binding power through the action of radiated heat. On the other hand, the exterior may appear to have been destroyed, whilst the interior is still as sound as ever, and pointing is all that is needed. Under such circumstances it is cheapest in the end to consult an expert in mortars, and to follow the advice he gives after he has examined the site. Such a man knows from past experience the almost indescribable signs which distinguish safe from unsafe mortar, and his opinion would therefore be more reliable than that obtained from an ordinary architect or builder. We advise you to consult Dr A. B. Searle, The White Building Sheffield, on the matter, as he has paid special attention to this subject.

Tip-up Baths: Question of Rating.

A. W. writes:—"A pair of houses comprising kitchen, sitting-room, parlour and three bedrooms, are fitted, in the kitchens, with patent tip-up baths. The water supply to the houses consists of one service tap—one w.c., no water being laid on to baths. The local council demand a water rent, which, in the demand note, is under the heading of fixed baths. I have objected on the grounds that the term 'fixed baths' implies a separate and additional water tap, and also that strictly speaking the baths are not fixed. I declined to pay but, having considered my objection, the council demand payment. Can a rate in such circumstances be legally enforced?"

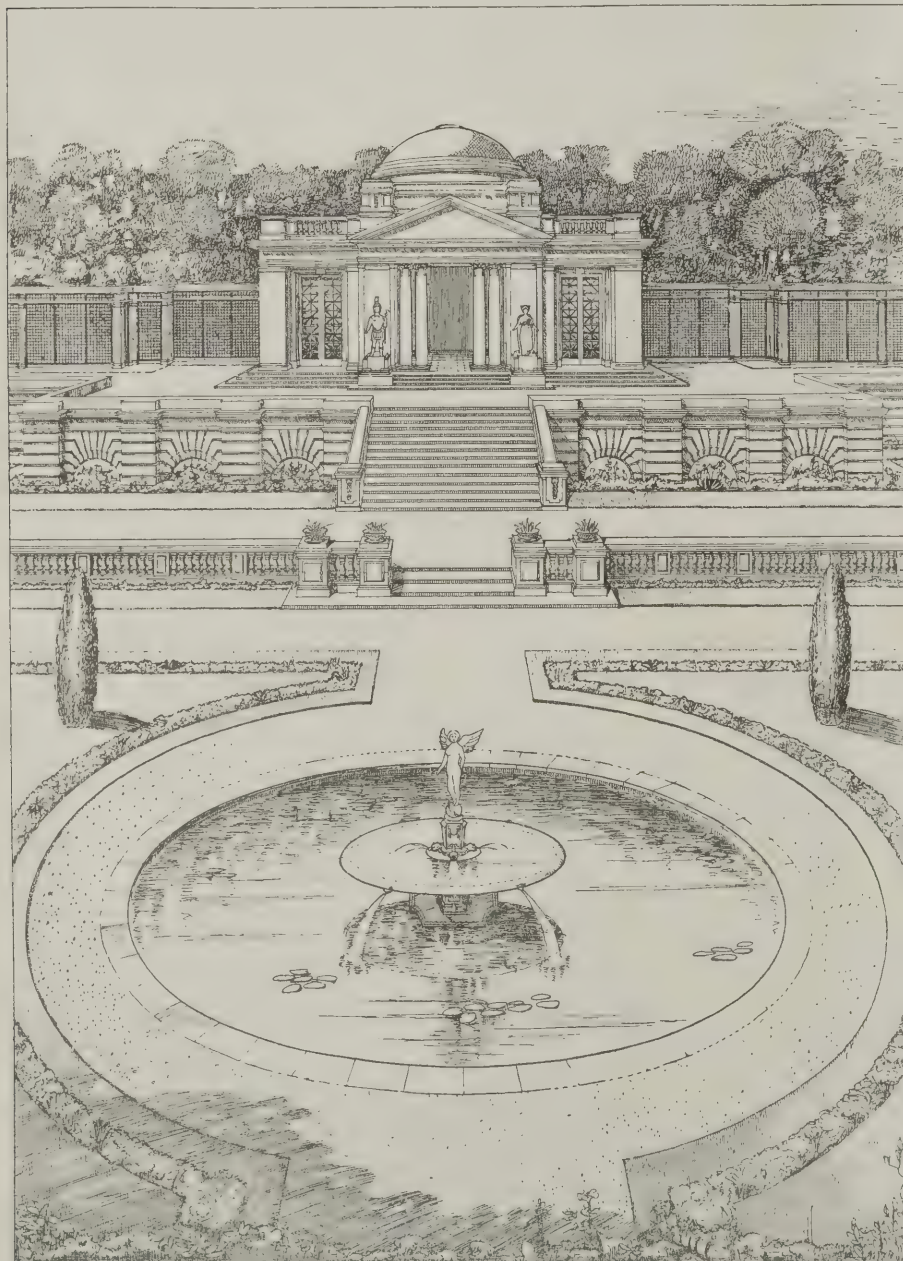
—I can find no recorded legal decision upon this rather interesting point.

There appears to be no logical reason for treating the "tip-up bath" (as described) as a fixed bath, and I am of opinion that, under the circumstances the local Council will find themselves unable to enforce their demand. I advise that the remainder of the water rate be tendered, but that the portion referring to "fixed baths" be repudiated. F.S.I.

A PAVILION FOR AN ITALIAN GARDEN IN ENGLAND.

The subject set in the design competition recently instituted by the Northern Architectural Association was a "Design for a Pavilion to be erected in an Italian Garden in England." The design which we now publish, by Mr Marcus K. Glass, of Newcastle, was awarded the first prize.

The only condition made was the size



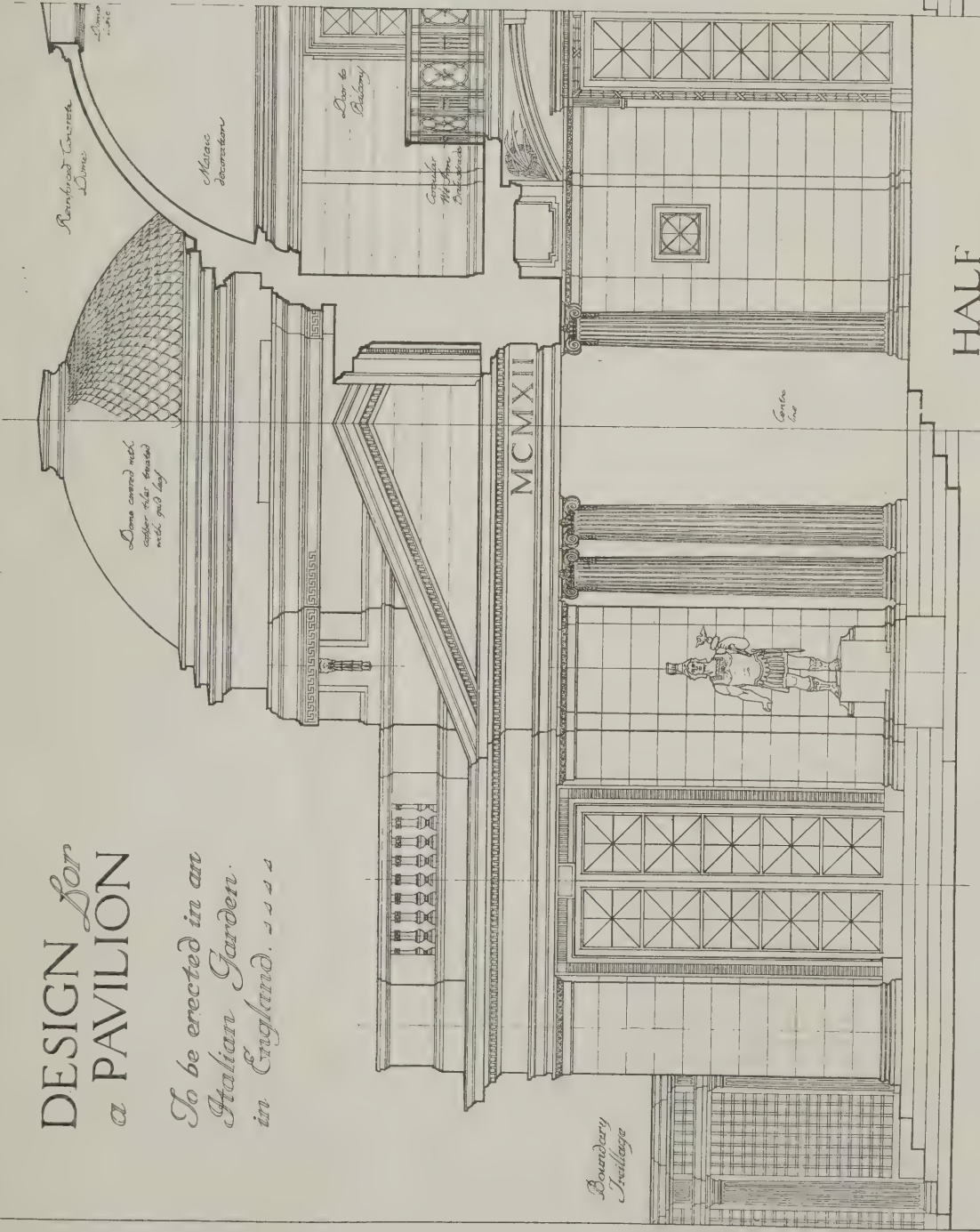
PERSPECTIVE VIEW

DESIGN FOR A GARDEN PAVILION. BY MARCUS K. GLASS.

DESIGN *for*
a PAVILION

*To be erected in an
Italian Garden.
in England. 1912*

HALF
INCH
SCALE
DETAILS



HALF FRONT ELEVATION

HALF
SECTION

HALF SIDE

BY MARCUS K. GLASS.

of the building, which was restricted to 50 ft. by 25 ft. An endeavour has been made to design the building and its setting, together with the lay-out of the surrounding garden, on good Classic lines.

The lower floor is divided into three compartments, the ante-rooms having separate access to the terraces and being subdivided from the central compartment by means of bronze sliding doors. Over the central compartment is a circular gallery reached by spiral staircases, the walls of the latter being carried up to the springing of the dome, which is of reinforced concrete covered externally with gilded copper slates. Over the ante-rooms are balconies or roof-gardens entered from the gallery.

PRIVATE HOUSE LIGHTING BY ELECTRICITY.*

BY W. R. RAWLINGS.

Dwelling-houses may be roughly divided into three types—namely, (1) the cottage, or artisan's dwelling; (2) the middle-class house; and (3) the mansion, both town and country.

The first type—namely, the cottage—being the humblest of the three, has, until recent years, been practically neglected as far as electric lighting is concerned, for obvious reasons, but it is now generally agreed that it offers a promising field for enterprise.

Coming next to the middle-class house, we find that, while there is, of course, much more demand for increased illumination and decorative effect, there are naturally limitations as to expenditure. Town and country mansions offer the best examples and opportunities of the highest developments of artistic illumination.

What is the proper amount of light required? In the author's opinion the art of illumination in the home is not to illuminate any room equally all over, but to produce the proper light and shade effect, according to the purpose for which it is intended.

There is no difficulty in providing a certain number of foot-candles for this or that purpose; the problem of house illumination is not so much one of foot-candles as of convenience, taste, and personal requirements.

It may be admitted that there is a minimum limit in foot-candles for specific work. For instance, a bedroom is comfortably illuminated with a variation from .2 to 1 foot-candle, but the dressing table and the part in front of the dressing mirrors must have at least 6 to 10 foot-candles on the dressing table surface; but this amount of illumination must be confined to these special positions.

A dining table requires not less than 2.5 foot-candles, and need not exceed 3.5; but the ceiling and walls of that room should be kept from .5 to 1 foot-candle, so that the surroundings may be subdued in comparison with the table, and for this reason the author did not advocate here indirect illumination.

Most people occasionally seek the shelter which is to be found in the alcove, conservatory, and the shade of the palm, and it is only when the actual illumination for specific work is required, such as for reading, writing, and the illumination of special objects, that the brighter light is desired. The billiard table perhaps provides an good example

as any of this contrast effect. It is well known that while the player likes a strong light on the table, he prefers a lower illumination for the rest of the room. It might, perhaps, have been thought that to illuminate the billiard table properly a volume of light, such as that given by a skylight, would have been desirable; but, as a matter of fact, professionals prefer the method of local illumination.

The author knew of nothing more uncomfortable than a room equally illuminated on every square foot of the floor, and a room so lighted was, in his opinion, in-artistic. He suggested the following rules for illuminating the home: (1) That a room should not be evenly illuminated all over. (2) The filament of the lamp should be so placed as not to be in the line of vision under normal conditions. (3) The position of the light should be so placed as to illuminate specific objects (according to the nature and purpose of the room.) (4) That small units of light are in general to be preferred. (5) Indirect lighting should only be used for general lighting, or as supplementary to the necessary local illumination.

The time is coming when the illuminating engineer will also be a party to the arrangement of windows and the selection of the colour scheme. At the present time this phase of the art is frequently settled without his experience being consulted at all. The engineer is set the task of illuminating the house as he finds it in the best manner possible. The problem frequently assumes the form, not "How best to illuminate the house," but "How the problem can be solved to the satisfaction of the employer and his friends," most of whom have opinions of their own; and, since they pay the piper, it is natural they should desire their ideas to be carried out.

It is a common experience to be met with the remark that "it is not fashionable now to use brackets"; or another will remark "that no one thinks of fitting pendants"; while a third insists upon having nothing but standards, each in turn raising objections to one or other of the three fixtures. It is therefore a matter of tact in obtaining more or less a compromise between what is considered correct and what the powers that be insist upon.

It is seldom that the engineer is allowed free scope in placing the lights as he in his opinion thinks best, and, in a word, it is more difficult to satisfy the taste of the owner than the actual requirements of the house.

Not only do opinions differ as to the fittings, but there is a greater diversity with the individual as to the amount of light required. Some ladies insist upon having a light of 20 to 30 foot-candles on the dressing table, while another complains that one-fourth that amount is too much, from which it will be readily seen that it is difficult in the case of private houses to specify the illumination in foot-candles even for a specific purpose.

Again, one has to take into consideration the positions of the windows and the general arrangement of the furniture. In many instances the old positions which were allocated to gas or oil, permanently fixed with a view of being within easy reach, must be retained. For the owner, having adapted himself to the general inconvenience of the arrangement, will insist upon the new lights being in the same position as the old. Many absurdities of lighting to-day

are due to this and the other causes which have been mentioned.

The town house requires more light than the country house; the same people who consider a 16 c.-p. lamp too strong in the country will complain that a 30 c.-p. lamp is insufficient when in town. This diversity is one of importance in all lighting problems, and plays most important part in the illumination of houses. Excess of light in the town compels the same fault to be perpetrated in the home, and for this reason the hall and corridors should never be illuminated to a higher degree than the rooms. The effect would be to render the remainder of the lights insufficient by contrast. The author had known a number of cases where the illumination of the house generally was considered satisfactory until a metal filament lamp had been fixed in the hall, doubling the original candle-power and causing dissatisfaction with the rest of the lighting (which until then was considered ample). It is therefore important that in no case should any excess of light be provided in the less important positions in the house, such as the corridors, etc.

The author then illustrated by a series of thirty-five slides, which he described in detail, some of the foregoing suggestions as to how the present-day house should be illuminated.

In conclusion, the author said that by stimulating discussion on these matters, the Society will make more fully understood that the nature of good illumination in the home, the advantages of various styles of lighting, and the mistakes to be avoided; and the contractor who has studied these matters will be in a much better position to put his views forward; for, having definite knowledge at his disposal, he will be able to explain to consumers *why* a certain course desired is not advisable, and he will have behind him the conclusions of the Illuminating Engineering Society in doing so. Having confidence that his contentions are correct, he will be able to advise consumers much more effectually, and to induce them more readily to accept his view. In this way we may hope to avoid many mistakes which ultimately create dissatisfaction, and of which the contractor not infrequently bears the blame. There are many points in private house lighting which remain to be discussed and settled, and the Society, by promoting mutual education in these matters, should help to raise the status of the contractor and enable him to assume a more independent position.

SOCIETIES AND INSTITUTIONS.

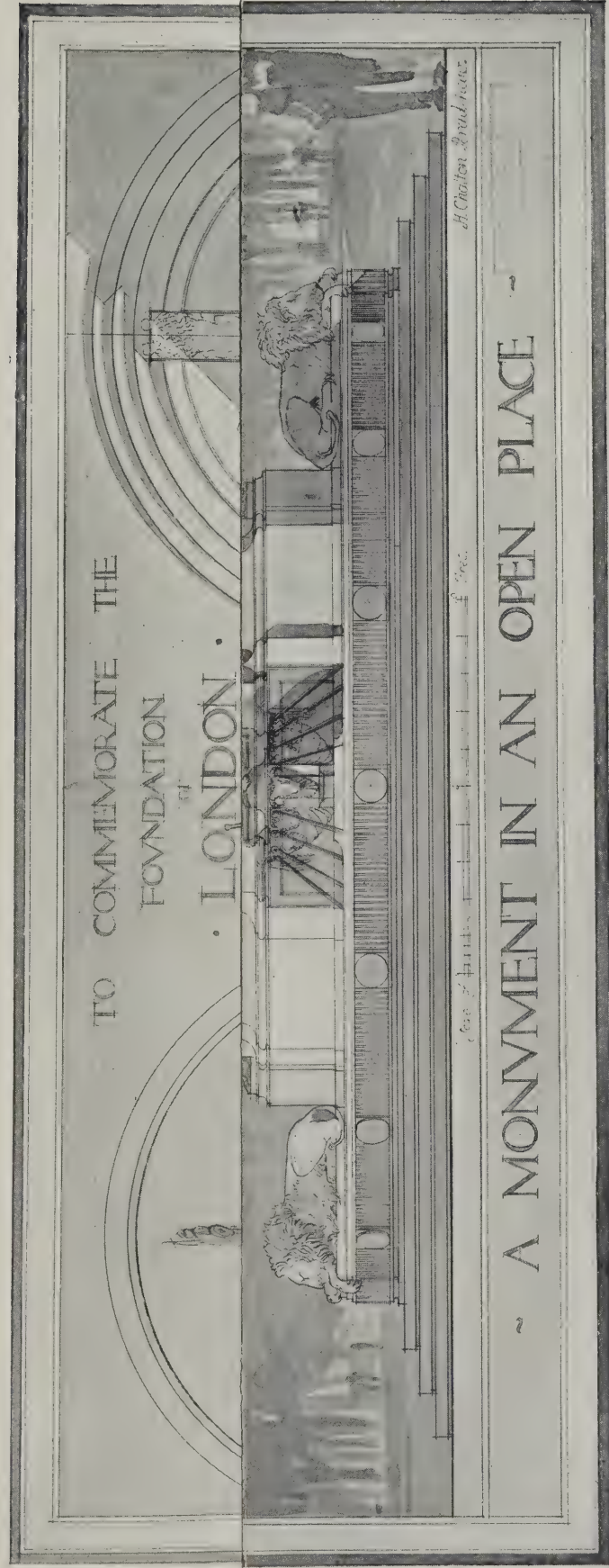
MANCHESTER SOCIETY OF ARCHITECTS.

Forty-eighth Annual Report.

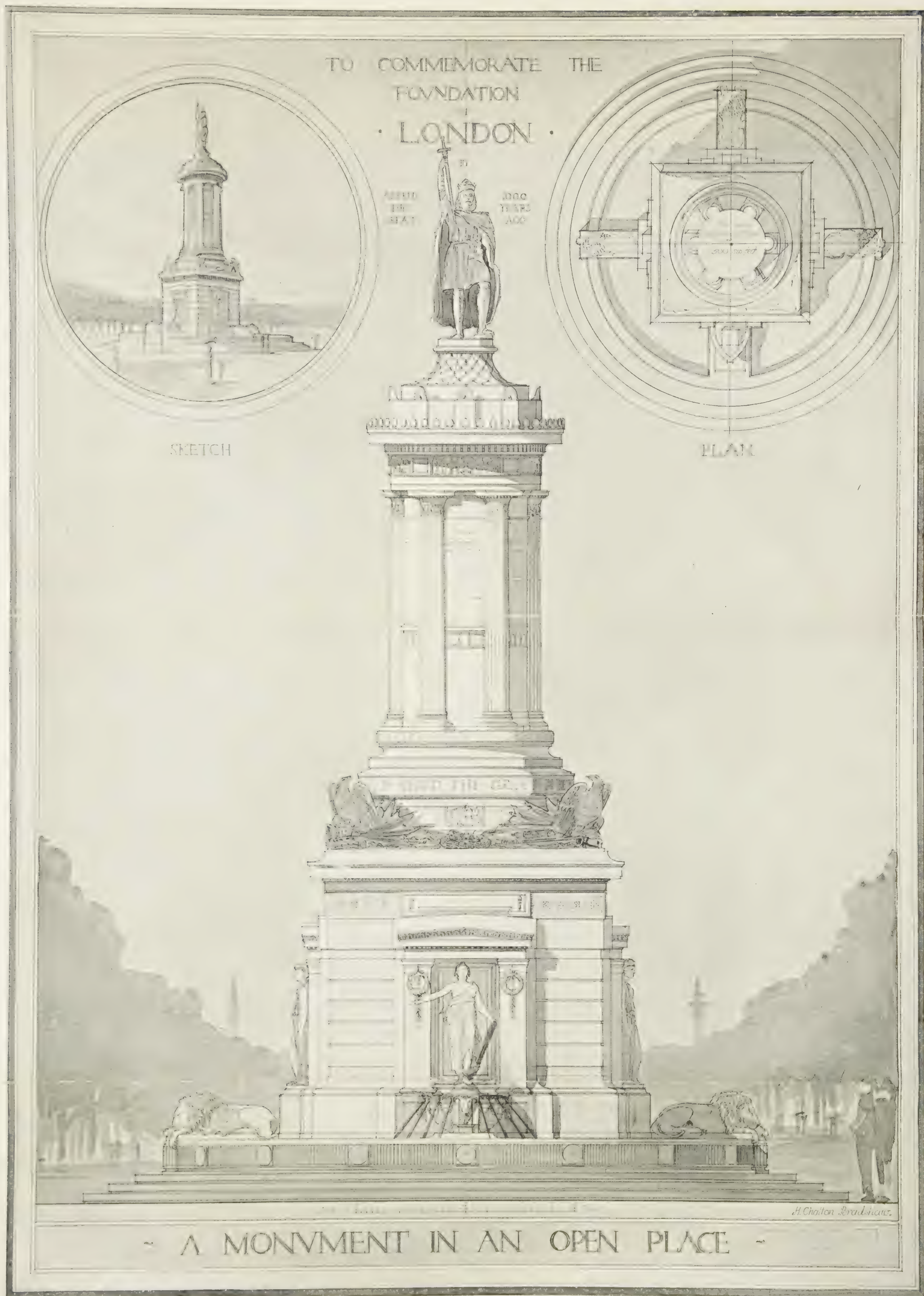
At the annual general meeting of the members of this Society, held on April 24th, the report and accounts were approved and adopted, and the following officers and members of council were elected: President, Mr. John Brooke, F.R.I.B.A.; vice-presidents, Professor S. H. Capper, M.A., A.R.I.B.A., and Mr. F. B. Dunkerley, F.R.I.B.A.; honorary secretary, Mr. Isaac Taylor, F.R.I.B.A.; assistant hon. secretary, Mr. J. T. Halliday, A.R.I.B.A.; members of council, Messrs. A. E. Corbett, John Ely, W. C. Hardisty, Joseph Holt, P. D. Lodge, Paul Ogden, Claude Paterson, J. H. Sellers, G. Sanville, Edgar Wood, J. H. Woodhouse, and P. S. Worthington.

*Extracts from a paper presented at a meeting of the Illuminating Engineering Society, April 16th.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, May 8th, 1912.



This drawing is one of a set now being circulated among the Allied Societies by the Board of Architectural Education as an example of the style of draughtsmanship approved under the new alternative scheme of Problems in Design which are to take the place of Testimonies of Study for the Final Examination of the Royal Institute of British Architects.



In the forty-eighth annual report, it is shown that the aggregate membership is 283—comprising 112 Fellows, 118 Associates, and 53 students—an increase of one as compared with the number recorded in the preceding report. The Council have decided to divide the whole area of their extensive province into twenty-seven districts, and to appoint in each an architect to act as correspondent for his district. By this means it is hoped to keep in touch with outlying parts, and to obtain the very earliest information of any proposed competitions and town-planning schemes, and generally to extend the usefulness and influence of the Society.

The Council successfully interested itself in the preservation of the old Town Hall in King Street, supporting the proposal of the Parks Committee to re-erect the scholarly and dignified façade to a suitable position in one of the parks, and contributing £25 towards this object. The public interest having been thus stimulated, the Parks Committee agreed to re-erect the façade in Platt Fields.

Reports of the Education, Competition, House, Library, Town Planning, and Students' Committees show healthy activity in all these directions.

Nottingham Architectural Society.

The Council of the Nottingham Architectural Society report that they have been in consultation with the building trades employers with regard to the difficult problem of specialists and sub-contractors, and have also considered the scale of charges suggested by the Royal Institute and the legal liability of architects. They have also brought pressure upon the framers of competitions to ensure fair conditions and reasonable payments. As the jubilee year of the society commences next November, the council have been asked to consider how best to celebrate it.

At the last meeting of the Society the following elections took place:—President, Mr. E. R. Sutton; vice-president, Mr. H. Gill; members of council, Messrs. R. Evans, W. R. Gleave, A. Marshall, E. H. Heazell, and H. G. Watkins; associate members, Messrs. A. Dale and H. A. Dickman; honorary secretary-treasurer, Mr. F. M. Royle; hon. secretary of the designing club, Mr. W. H. Swann; honorary librarian, Mr. R. Spencer.

Institution of Civil Engineers.

At last week's annual general meeting Mr. R. Elliott-Cooper (London) was elected president, and Messrs. A. G. Lyster, M.Eng. (Liverpool), B. H. Blyth, M.A. (Edinburgh), John Strain (Glasgow), and G. R. Jebb (Birmingham) were elected vice-presidents.

Leicester Society of Architects.

Mr. A. H. Hind, A.R.I.B.A., has been elected president of this Society for the ensuing year, with Messrs. W. A. Catlow, W. E. Keites, S. P. Pick, H. H. Thomson, C. J. M. Cowdell, and N. B. Robertson as Council.

London University Site.

Replying to Mr. McCallum Scott in the House of Commons on the question of the proposed new site for London University, the Prime Minister said he understood that a less sum than £375,000 would be accepted for the site on the Bedford estate. He was not aware that the question of the value of the site referred to had ever come before the L.C.C.

THE NEW R.I.B.A. PROBLEMS IN DESIGN.

As already announced in our columns, the alternative Scheme of Testimonies of Study for the Final Examination of the Royal Institute of British Architects will come into operation at the option of the candidates in November next, and after the end of the year 1913 the existing Testimonies of Study for this Examination will be abolished. Six alternative Problems in Design will be set by the Board of Architectural Education each year, and candidates for the Final Examination must submit designs in answer to at least four of these problems. These alternative problems will be published twice a year, three sets in January, and three in July. The subjects set for the first half of the present year were:—

Subject I.

(a) A large Monument, to commemorate King Alfred's refounding of London one thousand years ago, for a public place in the City, not to cover more than 500 superficial feet; (b) A Terrace of Five Houses, 20 ft. frontage, each six stories high, including basement, facing the parade of a small watering-place.

Subject II.

(a) A large Monument to an Explorer, to be placed against the wall of a public

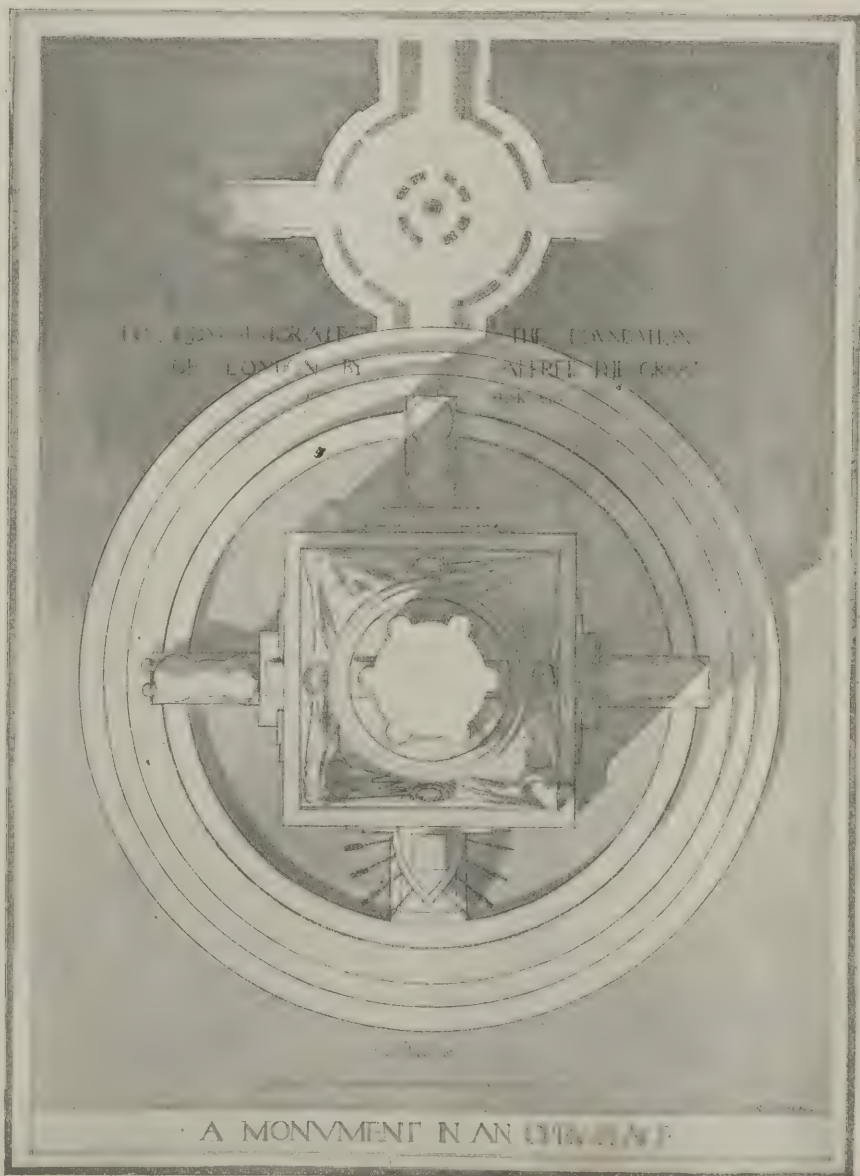
building; (b) a Cloister with external entrance gateway or tower to a collegiate building round a courtyard 100 ft. square.

The drawings for subjects 1 and 2 have already been submitted by students in the United Kingdom, and two of the sets are being circulated among the Allied Societies as examples of the class of drawing that is desired. These two are by Mr. H. Chalton Bradshaw and Mr. W. Harding Thompson, students at the School of Architecture, Liverpool University. Mr. Bradshaw's design for a monument to King Alfred is reproduced as the Centre Plate in this issue. Mr. Harding Thompson's design for a terrace of houses will be reproduced in a later issue of this Journal.

Subject III.

The third subject set comprises (a) A Detached Ballroom to a large country house, to be connected with the house by a covered way; decorations to be specially considered. (Shaded drawings to $\frac{1}{2}$ in. scale showing both interior and exterior, and a detail of decorations.)

(b) A Landing Stage to a river or lake, with a restaurant. (Drawings to show complete construction $\frac{1}{8}$ in. scale and $\frac{1}{2}$ in.) The date for submission of designs in this third subject is June 30th for the United Kingdom.



BY H. CHALTON BRADSHAW.

COMPETITIONS.

Swansea Police Station Extension.

The competitive designs for the extension of the Swansea Central Police Station, with the erection, under the same roof, of a police court, are now being adjudicated. There are about half a dozen sets.

Church at Carrington.

The designs of Mr. W. Curtis Green, F.R.I.B.A., have been selected by the assessor, Mr. E. S. Prior, F.R.I.B.A., F.S.A., for the first premium in this competition. Specially commended: Mr. C. Gascoyne, Mr. Macdonald Gill, Mr. G. C. Horsley, F.R.I.B.A., and Mr. Charles Spooner, F.R.I.B.A., all of London.

Winnipeg Parliament Buildings.

In this preliminary competition, in which the Government of Manitoba invited designs for a building of the estimated cost of £400,000, Mr. Leonard Stokes, P.R.I.B.A., has selected the following five architects to take part in the final competition: Messrs. Brown and Vallance, Montreal; Messrs. Clemsha and Portnall, Regina, Saskatchewan; Messrs. E. and W. S. Maxwell, Montreal; Messrs. Sharp and Murray, Toronto; and Mr. F. W. Simon, F.R.I.B.A., Liverpool. Each of these competitors will receive a sum of 2,000 dollars. The competition was limited to architects being subjects of the British Empire, and practising therein.

Bristol Town-Planning Scheme.

At Bristol a town-planning competition is being promoted to deal on broad lines with the whole of the environments of the city where building is likely to take place. The competition is being arranged by a special joint committee of the Bristol Society of Architects, the Somerset, Gloucestershire, and South Wilts committee of the Surveyors' Institution, and the Bristol Civic League. The committee is at present engaged in drawing up the conditions of competition, which, it is hoped, will take place some time during the summer. It will not be confined to local competitors, but will be thrown open to the country generally. The conditions, which will follow those of the competition held at Halifax last year, will ensure that the plans submitted will be of such a character as to be of service to the Corporation if they think fit to make use of them when the town planning of Bristol is eventually undertaken.

Municipal Buildings, Padiham.

This competition for plans of a town hall and other municipal buildings is mainly for the purpose of laying out the ground, and Mr. Arthur S. Brewis, secretary of the Manchester Society of Architects, states that it is not the intention of the promoters to carry out much, if any, of the building scheme in the near future. As the only remuneration offered for the complete plans of all the buildings is two small premiums, the Competitions Committee of the Society have been endeavouring to induce the promoters to meet the special conditions either by some guarantee for the employment of the successful architect, or by substantially increasing the amounts of the premiums offered. The promoters, however, cannot see their way to vary the terms already offered. Mr. Brewis is instructed by the

Council to inform members that these conditions are unsatisfactory, and that they must not submit any designs in this competition.

Hale Town Planning.

Mr. Arthur S. Brewis, secretary of the Manchester Society of Architects, has informed the members that the Hale Urban District Council decline to make any alteration in the conditions of their town-planning competition. Each competitor, he says, has to purchase Ordnance sheets for the district at a cost of about 25s., and as these were last revised in 1908, he will have to go over the whole district and embody the numerous buildings since erected. The competitors are also asked to estimate the total amount of their charges should they be successful. As the duties are to a very large extent at present unknown, this becomes an almost impossible task. There is no guarantee that any qualified assessor will be appointed, either to adjudicate on the plans or to advise the Council. The Competitions Committee of the Manchester Society of Architects approached the Hale Council before the conditions were issued, and as soon as the conditions appeared they pointed out to them the unfairness of the points mentioned above. The Council of the Society consider that these conditions are unsatisfactory, and direct that members of the Society must not submit, either directly or indirectly, any designs in the above-mentioned competition.

THE AUSTRALIAN CAPITAL.

The following correspondence appeared in the "Times" last week:—

To the Editor of the "TIMES."

SIR,—The attention of the Council of the Royal Institute of British Architects has been called to a telegram in your issue of April 16th in which your Sydney Correspondent states that the designs for the Federal Capital have been reduced to a dozen, most of them the work of Americans, Frenchmen, or Germans, and the British designs have only a small chance. In the absence of fuller information this statement would naturally lead your readers to think that British architects have been unsuccessful in competition with foreigners in the planning of the new Australian city. The facts are these. When the conditions of the competition were published by the Minister of Public Works the Australian Institutes of Architects at once protested against their unfair and unsatisfactory nature. There was no proper provision made for the appointment of qualified assessors, and the Australian Institutes warned the Minister that unless the conditions were amended their members would refuse to take part in the competition. The Minister refused to adopt the suggestions of the representative architectural bodies, and they accordingly vetoed the competition. They then appealed for support to the Royal Institute of British Architects, of which they are affiliated societies. The Royal Institute, which entirely agreed with the attitude of the Australian Institutes, endeavoured both by correspondence with the Minister and by deputation to the Acting High Commissioner in London, to induce the Australian Government to put the competition on a fair and proper basis. The Minister again refused to alter the conditions in any way, and the Royal Institute supported the action of its affiliated societies in Australia by issuing

a veto to its members against the competition and by informing the American Institute of Architects, and the principal architectural bodies on the Continent, of the action which it had taken in the matter.

There is reason to believe that the great majority of the architects of the Empire have loyally supported the decision of their representative bodies and have not entered for this competition.

IAN MACALISTER, Secretary, Royal Institute of British Architects.
London, W.

The gist of the cablegram to the "Times" is that "The designs for the Federal Capital have been reduced to a dozen, most of them the work of Americans, Frenchmen, or Germans," and it was added that the British architects had but a small chance, which, taking all the circumstances in consideration, is an unfortunate and unfair observation.

To the Editor of the "TIMES."

SIR,—A letter on the above subject appeared a few days ago in your columns signed by the Secretary of the Royal Institute of British Architects. That letter has just been brought to my notice and I beg leave to reply.

It contains the very serious statement that no proper provision has been made for the appointment of properly qualified assessors. The Australian Minister assured the Australian and British architects that the assessors should be thoroughly qualified professional men, and this assurance has, I believe, been faithfully carried out by the appointment of the following gentlemen: Mr. J. M. Coane, chairman, Mr. J. H. Smith, and Mr. John Kirkpatrick. The secretary is Mr. C. J. Clarke. The chairman is a well-known consulting engineer and surveyor in Melbourne. Mr. Smith is president of the Victorian Institute of Civil Engineers, and Mr. John Kirkpatrick is a Sydney architect of great ability, who was a member of the committee appointed by a preceding Government to report upon the suggested city for the capital. The secretary appointed is Mr. C. J. Clarke, a Tasmanian architect.

The nature of the competition must be kept in view. It is not for a building, or series of buildings. It is to submit a design for a new city and surrounding on a vacant piece of country, with all the town, street, garden, and park planning such a project involves.

G. H. REID.
Commonwealth Offices, Westminster.

FEDERATION NEWS.

Conciliation Proceedings at York.

A meeting of the Local Conciliation Board was held in the Old Council Chamber of the Guildhall, York. Councillor G. Sharp, chairman of the board, presiding. With respect to the joiners' notice for increase in wages to 9d. per hour instead of 8½d., the following resolution was carried unanimously:—"That all payments be reckoned by the hour, and 8½d. per hour be the standard wage to all of fair average ability; such wage to be increased to 8¾d. per hour on January 1st, 1913." No minimum period for duration of this alteration to rule was fixed by the Board.

A question of walking time was referred to the Northern Centre Board

NEWS ITEMS.

Peter Pan in Kensington Gardens.

In Kensington Gardens on May Day Sir George Frampton's bronze figure of Peter Pan, with his fairies and mice and squirrels—the gift of Mr. J. M. Barrie—was disclosed at the tail of the Serpentine.

The Liverpool Chair of Civic Design.

At a meeting last week the Council of the University of Liverpool established a Chair of Civic Design and appointed to it Mr. S. D. Adshead. Mr. Adshead has previously held a lectureship in that subject in the University.

A Swimming Bath for Children.

A swimming bath specially designed for the teaching of swimming to school-children has been constructed by the Ealing Town Council. It is 65 ft. long, 27 ft. wide, and has a depth ranging from 3 ft. to 5 ft. 3 in.

New Embankment Garden.

The river front to the west of the Houses of Parliament is to be beautified this summer by a public garden extending from Lambeth Bridge to the Victoria Tower Gardens. The site is now being cleared.

Change of Address

Messrs. Gale, Durlacher and Emmett, architects and surveyors, have removed their offices to 15, New Bridge Street, Ludgate Circus, London, E.C. Their telephone number will in future be—6888 City.

New Buildings at Downside Abbey.

Cardinal Bourne visited Downside Abbey, near Bath, on Thursday last, to bless and open a large addition to the school buildings which has recently been erected from designs by Mr. Leonard Stokes, F.R.I.B.A.

A Work on Russian Architecture.

We have received from Mr. Nicholas Lanceroy, of St. Petersburg, prospectus of a volume entitled "Retrospective Exhibition of Architecture in Russia in the XVIIIth and first half of the XIXth Centuries." This work, edited by the Society of Russian Architects and Artists, has just been published.

Another London Hotel.

Another great London hotel is being planned. It is to be called "The Green Park," and is to occupy a site in Piccadilly overlooking the Green Park. It will cover an area now occupied by Nos. 108 to 115, Piccadilly, and Nos. 14, 16A, 18, 37, and 39, Brick Street.

"The Sprinkler Bulletin."

This quarterly publication, which is issued by Messrs. Mather and Platt, Ltd., Queen Anne's Chambers, Westminster, renders good service in the cause of fire-prevention by recording instances of the efficacy of the sprinkler system, and by showing the manner of installing them under varying conditions in different classes of buildings, of which excellent views are frequently given. The current issue contains articles on sprinklers in silos and in post offices, notes on recent great fires, a quotation from the "Insurance News" attesting that automatic extinction has been "an enormous boon both to the insured and to the fire offices," an illustrated description of an important

installation of sprinklers in the largest drapery establishment in South Wales, a quarterly fire report showing instances in which, in the United Kingdom, on the Continent, and in the Colonies, the sprinkler system has come into play, and other interesting information of similar character.

The Old Manchester Town Hall Facade.

At last week's meeting of the Manchester City Council Mr. E. F. M. Susman protested against the decision of the Parks and Cemeteries Committee to erect the facade of the old Town Hall in Platt Fields, as many residents had come to the conclusion that its erection would spoil one of the beauty spots of Rusholme. Mr. Tom Fox, deputy chairman of the committee, said they had no objection to taking the matter back for further consideration.

Transference of Practice.

Mr. J. Houghton Spencer, architect, No. 5, Hammet Street, Taunton, announces that, owing to impaired health, he has disposed of the practice carried on by him at Taunton continuously for forty-four years past to Mr. F. W. Roberts, F.R.I.B.A., architect, No. 2, Hammet Street, Taunton, who will continue to carry on the same at No. 2, Hammet Street, in conjunction with his own practice carried on by him in Taunton for the past twenty years.

A Business Appointment.

Mr. V. Zingler, for seven years manager of the Publicity Department of Messrs. Siemens Brothers and Co., Ltd., has been appointed manager of Messrs. Ozonair, Ltd., 96, Victoria Street, Westminster, London, S.W., in succession to Mr. R. Borlase Matthews, Wh.Ex., M.I.E.E., who is joining the General Electric Co., Ltd., 67, Queen Victoria Street, E.C., in order to devote his attention to the promotion of the sale of electric heating and cooking apparatus.

Reopening of Boulter's Lock.

After being closed for two months for enlargement, Boulter's Lock, Maidenhead, was reopened last week. The old lock was 152 ft. long and 18 ft. 6 in. wide; the new lock is 200 ft. long and 21 ft. wide, and it can be divided by intermediate gates, so that when the traffic is small, time may be economised by using one compartment instead of the whole. In place of the old rollers there is to be a mechanical boat conveyor, to consist of two electrically driven moving platforms crossing Ray Mill Island. It is hoped that the conveyor will be ready for service by Whitsuntide.

Alterations at the Hotel Cecil.

The alterations which have been in progress at the Hotel Cecil for some time past are now completed. The carriage approach through the Strand arch has been reduced to one-third its former size, and the floor space thus obtained, with the site of the lounge, which has also been absorbed, has been converted into two Palm Courts. The lower Court is about 93 ft. by 45 ft. and 32 ft. high, and the upper Court, which is reached by a wide flight of steps and is 4 ft. above the level of the lower Court, has a length of 110 ft., a width varying between 28 ft. and 34 ft., and a height of 28 ft. A covered way 10 ft. wide has been made between the

lower Palm Court and the east block for entrance to the hotel. The architect for the work was Mr. E. Keynes Purchase, F.R.I.B.A. All the decorations are in Louis Quatorze style.

The New Middlesex Guildhall.

The Duke of Bedford on Thursday last laid the foundation-stone of the new Middlesex Guildhall, Westminster, which is being erected on a site opposite the Abbey. Mr. James S. Gibson, F.R.I.B.A., is the architect, and Mr. James Carmichael the contractor.

Brighton Aquarium Improvement Scheme.

At the Brighton Aquarium it is proposed to construct garden terraces about an acre in extent, with level approaches from the Marine Parade, these terraces to link up with the existing Madeira Drive terraces, forming an attractive promenade to the eastern end of the cliff. A terrace for the performances of the municipal orchestra will be provided, with approaches both from the Aquarium and the Marine Parade, while a concert hall will have seating accommodation for 3,000. A winter garden, with promenade or lounge attached to the concert hall for reading, writing, and refreshments, is also suggested. The total cost of the scheme is £30,000.

Nottingham Parish Church.

Last week the foundation-stone was laid of a new chancel aisle and organ chamber for St. Mary's, the parish church of Nottingham. The building is estimated to cost about £4,000, the whole scheme, including the provision of a new organ, costing about £7,700. The new chancel aisle, which is to serve for the organ chamber and morning chapel, extends from the east wall of the south transept, along the south side of the chancel, to within one bay of the existing east end. The new chapel will open into the chancel by an arcade of three lofty arches, and the height of the chapel is to be the same, to the wall-plate, as the existing chancel. The three old south windows of the chancel are to be fixed in the south wall of the new chapel, and a new window, of similar design, will be placed at the east end of the aisle. Much of the old stone removed from the south wall of the chancel is being used in the erection of the additional aisle, the new stone being from Houghton. The roof of the aisle is of oak, covered with lead. The architect is Mr. Temple Moore, F.R.I.B.A., F.S.A.; the builder being Mr. Ullathorne, of Selby, and the clerk of works Mr. Thomas Fisher.

Public Opinion and the Prevention of Vandalism.

The Bishop of Winchester presided at a meeting held at Farnham Castle recently at which a society was formed for the preservation of the ancient features of the town and for promoting its beauty in future developments. The Dean of Wells, who is on a visit to the Bishop, said that such societies were needed all over England. Such a society would be of the greatest advantage to them at Wells. It was a city of wonderful beauty, not only in the cathedral and its buildings, but also in the city itself—the old houses, the old inns, the almshouses, and various charming features—and these were in constant peril of a very insidious kind, because it was no one's business exactly to look after them. The delay in the disappearance of one very interesting feature was partly due to the excellence

of succeeding mayors, who were unwilling to have their names associated with an act of barbarism. He thought it important that they should recognise the difficulties which beset civic authorities in many of these matters. They found themselves often very helpless as individuals, but were most ready to accept the informal help which came from the quickening of public opinion.

School Accommodation in London.

The Board of Education have notified the London County Council that they are prepared to accept the suggested scheme for the regular writing down over the next fifteen years of the accommodation of the class-rooms to 48 for infants and 40 for other children on certain conditions. The chief condition is that the proposal must be put into such a definite shape that it shall be easy for the Board to test and check from year to year the regularity with which it is being carried out, and must be stated in such clear terms that no risk shall arise of a dispute between the Board and the Council on the question whether the agreement is or is not being adhered to. Before the proposal is finally accepted an agreement must have been reached between the Board and the Council, with all the definiteness and precision possible,

on a programme, extending over not more than five years, for remedying existing defects and supplying existing deficiencies in school accommodation. When the programme is finally accepted, the Council will be immune from the Board of Education regulations which may be made during the fifteen years regarding school accommodation.

Five Losses in April.

In a statement, appearing in the "Times" of May 2nd, of the home fire losses in April, it is shown that the total estimated losses amounted to £332,650, compared with £273,700 in April of last year, and with £123,200 in March of this year. The largest losses on the list or twenty-eight fires in which the damage reached £1,000 or more are—£60,000 at a furniture-dealer's and adjacent premises at Ipswich; £36,000 at a fire originating at a seed warehouse at Warrington; £35,000 at a mansion at Navan, Ireland; £30,000 at a phonograph works at Wandsworth; £23,000 at a shipbuilder's at Middlesbrough; £20,000 at a fancy-box maker's in Old Street, E.C. The other five-figure amounts in the list were—£16,000, bleach works, Manchester; £15,000, mansion, Lake, Wilts; £12,000, mill, Wakefield; and £10,000, mansion, Worksop.

OBITUARY.

Sir John Taylor, F.R.I.B.A.

Sir John Taylor, F.R.I.B.A., late of the Office of Works, died on Wednesday last at his residence at Surbiton Hill. He was born in 1833, the son of Mr. William Taylor, of Warkworth, Northumberland. He entered the Office of Works in 1859, and became a Fellow of the Royal Institute of British Architects in 1881. From 1866 to 1898 he was surveyor of Royal Palaces, Public Buildings, etc., in the Office of Works, and was afterwards consulting surveyor. He was created K.C.B. in 1897. Sir John Taylor was engaged upon some important buildings in London. The chief of these is the new War Office in Whitehall, where he carried out, in conjunction with Mr. Clyde Young, the designs of the late Mr. William Young. He was also responsible for large additions to Marlborough House, for the Record Office in Chancery Lane, the Bankruptcy Courts and offices in Carey Street, the principal staircase and central exhibition rooms at the National Gallery, Bow Street Police Court and Station, and the Marylebone, North London, and South-Western Police Courts.

Mr. J. J. Bradshaw.

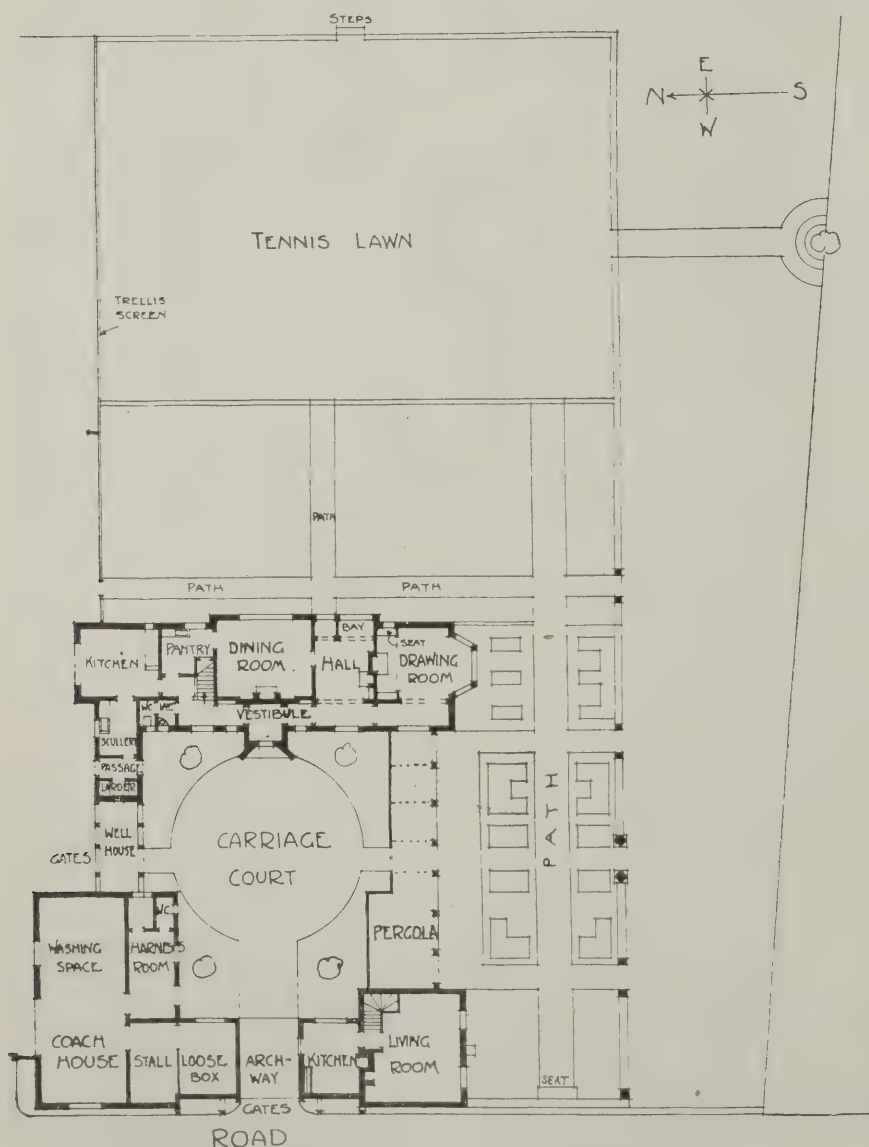
The death is announced, at Bolton, of Mr. Jonas J. Bradshaw, aged 76 years, the oldest architect in Lancashire. He was a Fellow of the Royal Institute of British Architects, and a member of the well-known firm of Bradshaw and Gass, which he founded. Mr. Bradshaw originated many improvements in the construction of cotton mills in Lancashire.

Mr. Frank Haviland.

By the death of Mr. Frank Haviland, which took place in London after a long and painful illness, we have lost an accomplished artist and versatile character at the comparatively early age of 42. Mr. Haviland was educated at the United Service College, Westward Ho! where he was within two or three years contemporary with Mr. Rudyard Kipling, while later, at the Nauenheim College, Heidelberg, he was a schoolfellow of Mr. John Hassall. He studied art at the St. John's Wood Art Schools and the Royal Academy Schools. In the early days of his career a portrait of Miss Constance Collier, hung "on the line" in the Royal Academy, attracted considerable attention. Mr. Haviland was a musician of considerable knowledge and executive ability, while the number of interesting models he has left behind him testify to his skill as a mechanical engineer.

Mr. C. Beresford Fox.

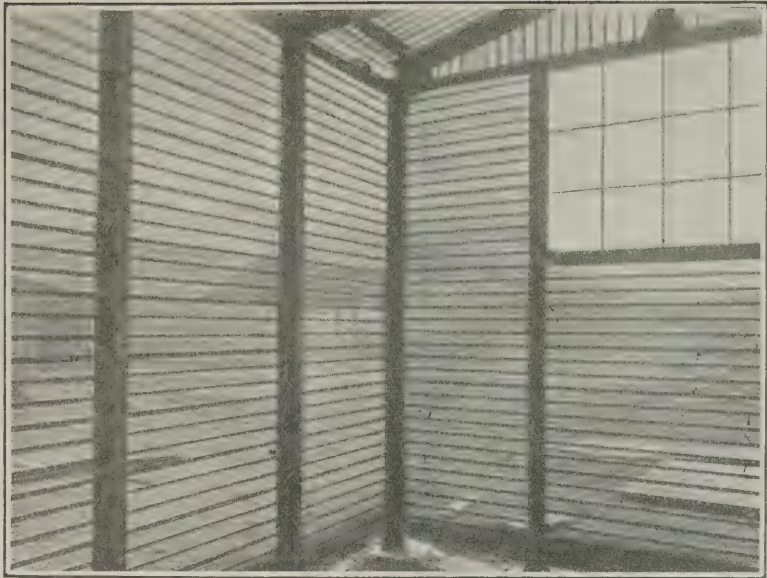
The death occurred on April 16th, in Toronto, at the age of 37, of Mr. Charles Beresford Fox, M.A., M.Inst.C.E., from the after-results of an operation for appendicitis. Mr. Fox, who was educated at Harrow and Trinity College, Cambridge, was, until his departure for Canada, a partner in the firm of Sir Douglas Fox and Partners. He had travelled round the world, and was then engaged as assistant engineer on the works of the Great Central Railway Extension to London. Afterwards he was in charge of the construction of the large bridge across the River Zambesi at the Victoria Falls for the Cape to Cairo Railway.



HOUSE AT GARBOLDISHAM, NORFOLK. P. MORLEY HORDER, F.R.I.B.A.,
ARCHITECT.

SOME NOTES ON "HY-RIB."

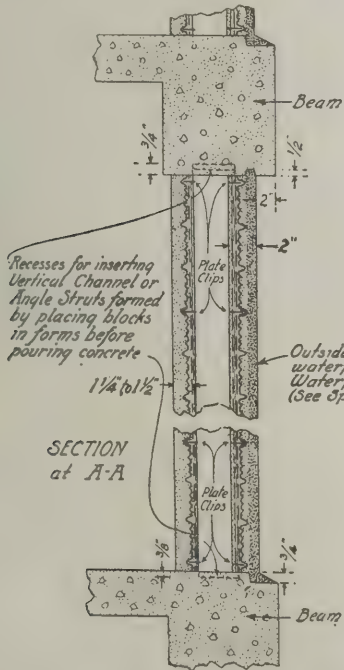
Architects and builders of the present day have at their disposal a variety of new materials and improved methods of construction, more especially in regard to the employment of steel in conjunction with concrete. In this country we rarely initiate, and are slow to take up anything new; there is, indeed, an ever-present conservatism which every inventor has to combat, sometimes in the form of personal prejudices, at other times in the form of laws and regulations. With regard to the first we may recall the prejudice, amounting almost to aversion, with which the average builder regards any new material or new method of construction; he has a tremendous tenacity for what he is accustomed to regard as the tried and accepted way of executing work. The new material and the new method, however, eventually force their own adoption, by reason of merits which, when demonstrated, can no longer be set aside, and thereafter the progress is rapid. Thus, architects and builders who were instinctively apprehensive of reinforced concrete when first introduced have since had abundant testimony to convince them of the excellence of such construction, and, having tried and tested for themselves, are now making the most extensive use of reinforced concrete; and similarly the building regulations of the London County Council, which persisted in requiring a reinforced concrete wall to be the same thickness as a brick one, though many times as strong, have had to be altered to meet the demands of the new method of construction. With some new materials, however, the merits are so self-evident, and the means of testing



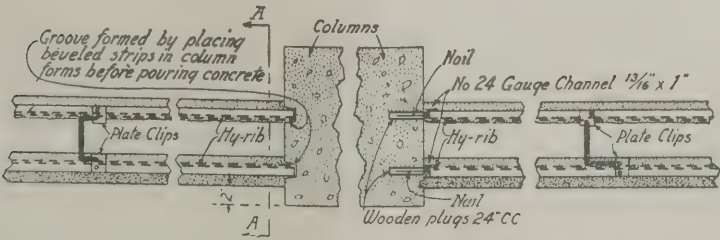
DETAIL OF SHED FOR MIDLAND RAILWAY CONSTRUCTED WITH "HY-RIB."

them so simple, that they have only to be introduced in order to find immediate acceptance. This is so with "Hy-Rib"—a metal lath put on the English market some time ago by the Trussed Concrete Steel Company, Ltd., of Caxton House, Westminster, and now largely employed for all kinds of buildings. It is obtainable in three gauges of English steel, and consists of a punched lath bordered by a stiff rib. The width is 10½ in. and the standard lengths 6 ft., 8 ft., 10 ft., and 12 ft. The rib gives great rigidity—so much so, in fact, that when employed for partition

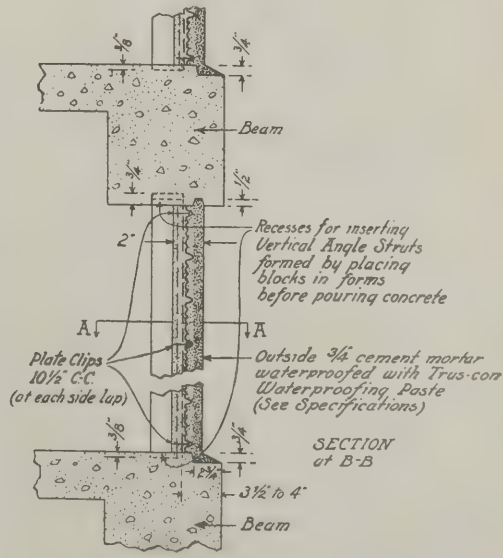
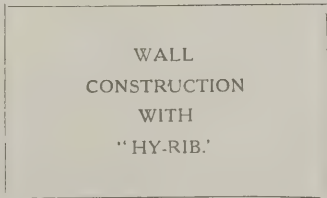
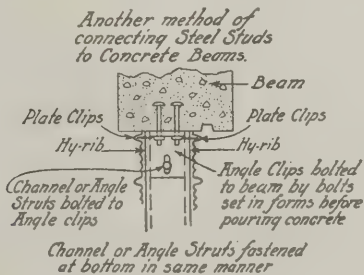
work there is no necessity for studding while for floors and roofs of concrete it serves the dual purpose of reinforcement and centering. The fact that it does away with the necessity for centering makes "Hy-Rib" a very economical material, and at the same time enables work to be carried out within the shortest possible time. The surface of the lath is dead true, and the mesh gives an excellent key with a minimum amount of material. The accompanying sections show the application of "Hy-Rib" for exterior walls built hollow and solid. The sheets are simply set up between the beams and plastered—in the case of hollow walls on the outer face only; in the case of solid walls on both sides. Internal partitions are similarly constructed, the ribs taking the place of studding. Thin but perfectly rigid partitions can be formed in this way, the thickness being only about 1½ ins. Such partitions are strong enough to withstand the blows of a sledge-hammer, and are fire-resisting. With regard to the latter, it may be mentioned that in a typical test with a 2 in. partition a fire of 1,700 degrees Fahr. was maintained for an hour and followed by the application of water from a hose, the result being entirely successful; the greatest deflection was no more than ¼ in.



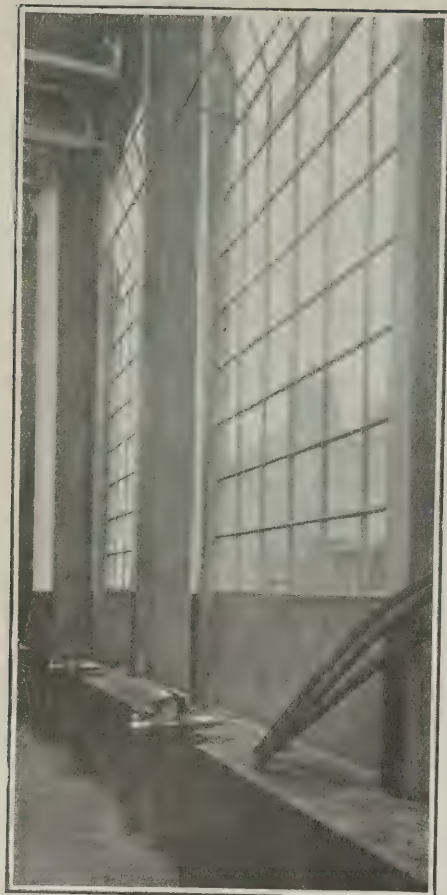
Hollow Exterior Wall: Vertical Section.



Hollow Exterior Wall: Horizontal Section.



Solid Exterior Wall: Vertical Section.



TRAMWAY SHED, HULL, SHOWING
11-IN. "HY-RIB" WALLS IN COMPARISON
WITH 18-IN. BRICK.

"Hy-Rib" is applicable to all kinds of ceilings and roofs, especially curved forms. A particularly striking example of its use in curved ceilings is to be seen in the music room at Sir Edgar Speyer's house in Grosvenor Street, the architects of which are Messrs. Detmar Blow and Billerey. In the same way it can be employed for arched floors to carry heavy loads. Only enough concrete goes through to secure a firm grip on the steel, leaving the soffit with a good surface for plastering. The ease with which the material can be bent renders it adaptable also for coves and curved surfaces generally.

For bungalows, sheds, workshops, and similar buildings, "Hy-Rib" is very serviceable, and certainly is a great improvement on the corrugated iron formerly used so extensively for such purposes. The accompanying photograph of a bungalow at Howth, Dublin, is interesting as showing a building having reinforced concrete beams and piers with "Hy-Rib" walls between.

In this way 2 in. walls can be constructed which are fire-resisting, water proof, and dampproof, thoroughly rigid, and non-conducting, so that the rooms within are warm in winter and cool in summer. In the last respect they are admirable for buildings in hot climates. The accompanying illustration shows one such in West Africa.

The cost compares favourably with any other form of construction, and is less than that of many. That buildings can be built with "Hy-Rib" at remarkably low cost is shown particularly in the case of the phthisis hospital attached to Clayton Workhouse, near Bradford. This building, which accommodates 24 beds, cost no more than £1,200, the figure being thus only £50 per bed. The hospital

is built with hollow walls in the manner described above, the external face being pebble-dashed and the internal face covered with a hard polished patent plaster; and though it occupies a very exposed site the building has withstood the weather in a very satisfactory manner.

"Hy-Rib" is being largely used at the present time for gasworks buildings, tramway buildings, and structures of a similar kind; thus, at Bournemouth a retort house 110 ft. by 42 ft. by 65 ft. high has been entirely constructed with it, while in the tramway depot at Hull the difference between the 18 in. brickwork walls and the 1½ in. "Hy-Rib" is very noticeable (see accompanying photograph).

For architectural purposes the uses of "Hy-Rib" are innumerable.

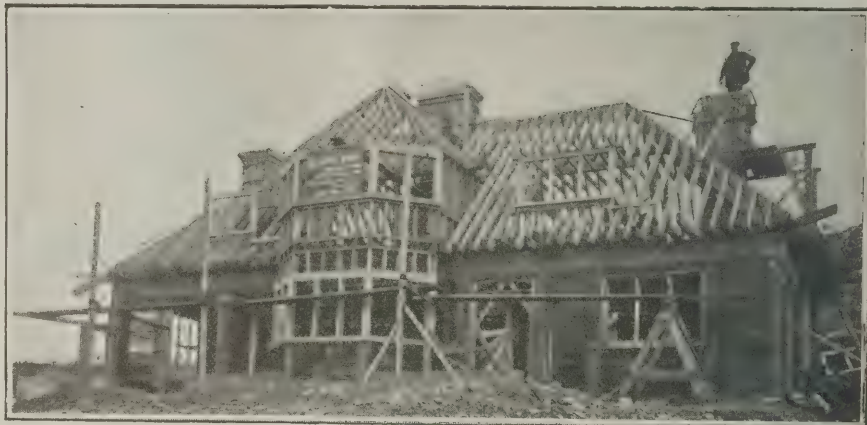
LEGAL.

Builder's Claim Against M.P.

Judgment was delivered on April 25th, by Mr. Pollock, Official Referee, in a claim against Mr. H. C. Mallaby-Deeley, M.P. for the Harrow Division of Middlesex, for work in repairing and decorating his house, Mitcham Court, Surrey.

From the statement of claim it appeared that under a written contract dated May 20th, 1911, the plaintiff had agreed to do certain work and variations at Mitcham Court, which work was proceeded with; but before the completion of the contract the defendant repudiated and put an end to it, ordering the plaintiff to

leave the premises. The defendant admitted the agreement, but said that was entitled to put an end to it under terms because it was alleged that the plaintiff's workmanship was bad and the materials inferior, that the whole work was subjected to incompetent supervision and that it was not done to the satisfaction of the defendant's architect, Mr. Langton Cole, in accordance with the contract. Accordingly the defendant claimed to deduct £272 3s. 4d. from the plaintiff's claim in respect of defective work, and an additional sum of £54 as damages for delay.—Mr. Pollock, in the course of his judgment, said that the first question to be decided was whether, in the circumstances existing in August, 1911, Mr. Mallaby-Deeley was justified in putting an end to the contract with Mr. Sandon. There appeared to have been complaint made by Mr. Mallaby-Deeley about the work, but there were not any by Mr. Langton Cole, the architect. Mr. Langton Cole had given his evidence in a way which would be acceptable by any Court. Mr. Marshall and Mr. Adams, assistants in Mr. Langton Cole's office, had given evidence, and both said that the conditions in August were such that in the opinion Mr. Sandon could and would have been willing to put right all the matters complained of by the architect and this was important, because the work was to be done to the satisfaction of the architect under the contract. The Official Referee held that in these circumstances the defendant was not entitled to put an end to the contract, and that Mr. Sandon was entitled on a quantum



Bungalow at Howth, Dublin.



A Bungalow, West Africa.

"HY-RIB" CONSTRUCTION AS APPLIED TO SMALL HOUSES.

meruit in any case for the work he had done. With regard to the quality of the work, the Official Referee said he had himself examined it, and was satisfied that certain portions of the external painting justified complaint, and some reduction should be made in this respect. With regard to the internal work, Mr. Bankes, on behalf of the plaintiff, had practically admitted that some of it was not satisfactory; the only question was, therefore, what sum ought to be deducted from the claim? With regard to the question of delay, the question was what was its cause? Mr. Sandon contended that he could not get possession of the rooms he wanted in order to get his work done. Mr. Mallaby-Deeley said he could have had any room he wanted, but he (the Official Referee) was satisfied from the correspondence passing between the parties that Mr. Mallaby-Deeley must be mistaken with regard to this.—Mr. Sandon's claim, subject to any set-off for defective work, was £477. The Official Referee said he considered the counterclaim to have been much exaggerated; he did not propose to go into details, but to treat the matter as if he were a jury, as the parties had invited him to do, and he considered that £70 was a proper sum to deduct from the plaintiff's claim. There would be judgment for the plaintiff for £207, beyond the £200 paid into Court, which was to be paid out, on the claim and counterclaim, with the costs of the action.

Validity of an Architect's Certificate.

On May 1st the Court of Appeal, composed of Lords Justices Vaughan Williams, Fletcher Moulton, and Farwell, had before them the case of Ashwell and Nesbitt, Ltd., *versus* Allen and Co., on the appeal of the defendants from a judgment of Mr. Justice Coleridge. The plaintiffs, a Leicester firm, brought the action against Allen and Co., contractors, of Westminster, to recover £377 for work done and material supplied to a building in London under a contract dated May 12th, 1909. They claimed the amount under a certificate of the architect of the building, the owners of which were Lewis and Allenby. The defendants were the general contractors for the work, which was that of re-erecting premises in Regent Street at a cost of £28,000, and the plaintiffs were the sub-contractors for the installation of certain radiators and hydrants to the amount of £3,320. Plaintiffs alleged that there was a balance of £377 owing to them, and that this sum had been included in a certificate given by the architects to the defendants as main contractors. This, however, the defendants denied, their case being that at the time in question disputes were going on as to the number of radiators and hydrants put into the building, and that they had given the building owners large credits for a difference in the number supplied and those originally specified for. They further said that the architect issued the certificate for £377 without notice to them, and that in the circumstances they could go behind it.—Mr. Justice Coleridge gave judgment for the plaintiffs, and the defendants now appealed.—Mr. Hudson, K.C., on their behalf, said that the sole point was whether the certificate of the architect was valid. His submission was that the architect had completely abdicated his position as certifier.—Mr. J. B. Matthews, for the respondents, supported the judgment of the court below, submitting that the certificate of the architect was valid and binding, there being no

suggestion of collusion.—Their lordships allowed the appeal, holding that the validity of the certificate was so much in doubt that the action must go to trial on a *quantum meruit*.—Appellants were given the costs, both in this court and the court below.

R'S METHOD OF PERSPECTIVE.

R's method of perspective has been made familiar to architects through the energies of its inventor, Mr. R. W. Roberts, of 51, London Road, Ipswich. Represented by means of a series of diagrams, with descriptive letterpress, his publication has gone through ten editions, and is now considerably developed from the earlier form, the diagrams having several new time-and-labour-saving devices. The author claims that by his method perspective drawings can be rapidly and accurately made to scale without distant v.p.'s—hips, valleys, mouldings, etc., being shown with great facility; that the correct drawing of vaulting is simplified; that the Orders can be drawn in perspective more easily; and that details can be designed in perspective to a large scale. Rapid sketching to scale is also possible, the accompanying illustration serving as an example. Full particulars of the system can be obtained from the author.

TRADE AND CRAFT.

"Pudlo": A Damp-proofing Preparation.

In a humid climate like ours, where dampness is all-pervading, special precautions are necessary in order to prevent the intrusion of moisture where its presence is dangerous or undesirable. Indeed, a vast amount of patience and ingenuity must have been expended on the many and various means of contending with dampness. The latest of these is that which has been introduced under the name of "Pudlo." This is a chemically prepared white powder, which, when mixed with Portland cement to which the usual sand or aggregate is added, renders the concrete waterproof. The two questions that immediately arise are: (1) Does the powder fulfil its purpose? and (2) does it affect the strength of the cement? As to the first question a most convincing reply is found in the fact that, during the last 2½ years, several firms have repeated their orders for "Pudlo" seven or eight times. Many tons of the powder have been used in the construction of cement-block buildings; and, moreover, the British Government departments have shown full confidence in it, the India Office and the War Office having specified it; and we understand that it is being extensively used in the fortifications at Gibraltar. These facts indirectly imply a satisfactory answer to the second



PERSPECTIVE SKETCH OF DUNDEE TOWN HALL. MADE BY R'S METHOD.

question; to which, however, a direct and most gratifying reply is available in the assurance by the makers that Messrs. Faija, the eminent experts in testing, find that there is absolutely nothing in "Pudlo" which could act to the disadvantage of Portland cement, but that, on the contrary, it actually renders the cement slightly stronger, and therefore the better able to resist stresses.

"Pudlo" is adaptable to all kinds of waterproof renderings, and is useful for walls from which dampcoursing has been omitted, as well as for those which are specially exposed to the weather; and it is of proved value in preventing the flooding of cellars and basements. A further appreciable virtue of "Pudlo" is that it prevents the unsightly efflorescence which so often gives rise to dissatisfaction and misapprehension. The architect will be glad of the opportunity of avoiding this constantly recurring annoyance; but he will have still more reason for gratification in the means which "Pudlo" affords of preventing the far more serious contingency of damp walls and flooded basements.

Pudlo is manufactured in England by Messrs. Kerner-Greenwood and Co., of 201, St. Ann's, King's Lynn, who, with the object of saving correspondents the trouble of writing for information, wish to state explicitly that cement with "Pudlo" is just the same as cement without "Pudlo," except that the rendering of cement is absolutely waterproof when the powder "Pudlo" is mixed with it, and that the rendering or concrete will never show any efflorescence. Many people ask whether "Pudlo" makes the work greasy, or whether it affects the setting of the cement, and to all these questions the firm say—"No! The cement is just the same, whether the 'Pudlo' is in or not."

The "All-time" Dampcourse.

In our issue of November 8th, 1911, p. 486, we gave a description of the "All-time" dampcourse, which consists of two thin layers of fibrous asphalt sheeting between which is interposed a continuous sheet of lead-foil. The proprietor, Mr. Alexander G. Lee, 14, John

Street, Bedford Row, W.C., now forwards a list of recent Government and other contracts upon which this dampcourse has been employed. It is not possible to reproduce this list *in extenso*, but the following brief selection will sufficiently indicate the esteem in which the dampcourse is held by architects specifying for important contracts: War Office: Barracks, Whittingdon, near Lichfield; Shorncliffe Sub-district; Royal Marine Depot, Deal; barracks, Fermoy and Tralee. Admiralty: Dockyards at Portsmouth and Malta; magazines at Bedenham; extension to Lodge Hill Laboratory, Chatterden; Naval Cadet Training College, Osborne; new electrical shop, and gun-mounting shop, Portsmouth. Home Office: Prisons at Birmingham and Norwich. The "All-time" dampcourse has been used extensively in works for the Great Western Railway Company; for the Great Northern in the Corby to Essendine widening; and for the Metropolitan Railway's Baker Street improvements. It has been employed in schools 'or the Hampstead Garden Suburb, and in similar buildings at Watford, Knebworth, Boreham Wood, Liverpool, Somersetshire, Paisley, etc.; for hospitals at Earlestown, Tynemouth, etc.; for various churches; for Queen's University buildings at Belfast; and for the new State Offices in Guernsey.

REINFORCED CONCRETE BRIDGE, WITLEY, SURREY.

This bridge is constructed to connect two portions of Lord Pirrie's estate at Witley Park, Surrey, which are at this point bisected by a roadway known as Bowlhead Lane. It is provided with a high railing as well as a parapet on account of the deer which are allowed to roam freely from side to side. The bridge and the parapet are in ferro-concrete faced with Medusa cement. The capping and trusses are in Portland stone. The whole of the work was carried out by Messrs. Holloway Brothers (London), Ltd., the wrought iron railing which surmounts the parapet being by Messrs. F. Clubb and Son, of Hampstead, N.W. Mr. Edward Warren, F.R.I.B.A., F.S.A., was the architect.



REINFORCED CONCRETE BRIDGE, WITLEY PARK, SURREY.
EDWARD WARREN, F.R.I.B.A., F.S.A., ARCHITECT.

COMING EVENTS.

Wednesday, May 8.
INSTITUTION OF MUNICIPAL ENGINEERS.—Sidney Palmer on "The Design and Planning of Working Class-Dwellings," 7 p.m.

Thursday, May 9.

CONCRETE INSTITUTE, Denison House, 296, Vauxhall Bridge Road, Westminster.—Third Annual General Meeting, 4.30 p.m. Second Annual Dinner, Trocadero Restaurant, Piccadilly Circus, London. 8 p.m.

SOCIETY OF ARCHITECTS, 28, Bedford Square, W.C.—Professor W. A. Scott, A.R.I.B.A., M.S.A., on "Grecian Architecture." 8 p.m.

Saturday, May 11.

SOCIETY OF ENGINEERS, 17, Victoria Street, Westminster.—Annual dinner, at the Criterion Restaurant, Piccadilly Circus, W. 6.30 for 7 p.m.

Monday, May 20

ROYAL INSTITUTE OF BRITISH ARCHITECTS, 9, Conduit Street, W.—R. A. Cram on "Recent University Architecture in the United States." 8 p.m.

Thursday, May 30, and Friday, May 31

SURVEYORS' INSTITUTION, 12, Great George Street, Westminster.—Meeting at Nottingham.

Monday, June 10

ROYAL INSTITUTE OF BRITISH ARCHITECTS, 9, Conduit Street, W.—Business Meeting. 8 p.m.

Monday, June 24

ROYAL INSTITUTE OF BRITISH ARCHITECTS, 9, Conduit Street, W.—Presentation of the Royal Gold Medal. 8.30.

Monday, September 9.

SOCIETY OF ARCHITECTS.—Examination entries close.

Monday, September 20.

SOCIETY OF ARCHITECTS.—Last day for submitting Scholarship Measured Drawings.

Tuesday, October 1, Wednesday, October 2, and Thursday, October 3.

SOCIETY OF ARCHITECTS.—Examinations for Membership.

Thursday, October 17.

SOCIETY OF ARCHITECTS.—Twenty-ninth Annual General Meeting. 8 p.m.

Wednesday, June 5.

INSTITUTION OF MUNICIPAL ENGINEERS.—Meeting of Southern District, to discuss the advisability of the Southern District forming a local association. 7 p.m.

INSTITUTION OF MUNICIPAL ENGINEERS.—Visit to the Show Rooms and Works of Messrs. Doulton and Co., Ltd., Albert Embankment, London. 2.30 p.m.

Retirement of Mr. A. V. Nutt.

Mr. A. V. Nutt, the resident architect at Windsor Castle, is about to retire, after forty-four years' service. It was Mr. Nutt who designed the pseudo-Gothic annexe to Westminster Abbey for the Coronation of King Edward, and he personally supervised its restoration last year. His work at Windsor is no sinecure, for the task of maintaining the Royal residence in perfect repair, and in restoring the exterior as becomes necessary is no light one. The name of Mr. Nutt's successor is not yet known, but there is very keen competition for the post. Mr. Nutt will probably receive a knighthood on his retirement.

The Demolition of Buildings: Jury's Riders.

A verdict of "Accidental Death" was returned on Thursday last at the inquest on the bodies of three men who, on April 24th, were crushed to death by falling brickwork whilst demolishing a building used as a stores by the Gas Light and Coke Company on land at Battle Bridge Road, King's Cross, but the jury added the following riders: "That the Coroner be asked to represent to the authorities that an inspector be appointed in connection with the demolition of buildings; and, further, without attaching any blame to the contractor, we think that in the future breaking up of these arches the men engaged in breaking up iron and brickwork should be at a safer distance away from the actual demolition."

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 15th, 1912.

Volume XXXV.

No. 904.



VIEW FROM THE LOGGIA, VILLA MEDICI, ROME.

(From a drawing by J. Hulot, exhibited at this year's Salon in Paris.)



BLOCK OF FLATS, No. 35, HARLEY STREET, LONDON, W. WILLIAM AND EDWARD HUNT, ARCHITECTS.

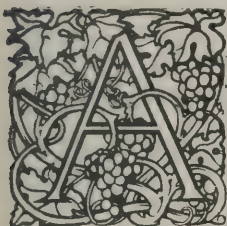
THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 15th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 904.

Architecture at the Paris Salon.



ARCHITECTURE at the Salon this year is without its usual central feature of a great set of restoration drawings from some student of the Villa Medici. There will be more of such exhibits in the future, no doubt; but evidently that kind of effort in the illustration of ancient architecture cannot be kept going

continuously. The most important set of drawings this year illustrates what appears to be an actual piece of work in process of execution, the "composition and architectural decoration of a French garden, on the lateral axis of the Château de R....;" the name of the place and the owner is not given, French proprietors having an objection to having their names published in an exhibition catalogue. The scheme seems to be that of an owner who aims at making a kind of private Versailles for himself on a small scale. It is illustrated by complete plans, sections of the ground, views, and details. The garden is a long design on a slightly sloping ground. Near the house is a square laid out in parterres, with a fountain in the middle; and off one side of the square opens a kind of semicircular open-air theatre with decorative arbours around it. Below the square, on the main axis, is a long sloping lawn bounded by trees on each side, and ending in a curved parterre and terrace flanked by pylons bearing equestrian statues. As a piece of decorative gardening it is a great scheme, such as is not often carried out as part of a private estate. M. Gréber is the architect.

As usual, there are a good many of those Utopian architectural schemes on a great, one might say an impossible scale, in which the younger generation of French architects love to indulge their imagination. The first thing we come to after ascending the steps from the sculpture hall is a scheme by M. Durand (pupil of M. Deglane) for a "monument to the glory of the independence of a great people"; the great people being, of course, the French nation. The centre feature of this is an enormous truncated obelisk, completely crushing the columnar order applied to its base, and sculptured on its face with a symbolical palm leaf, which, from the scale of the figures introduced, must be about two hundred feet high. Near this is a work somewhat more rational in its ambition, being a scheme prepared for the "Société pour le développement et l'encouragement des tous les Sports," aviation, of course, included. There appears to have been a site actually fixed on for the carrying out of this scheme, which includes a decorative garden with a pavilion in the midst, intended as a museum of everything connected with sport. M. le Mounier exhibits a design for "A permanent exhibition to the Glory of the Republic," a triumphal avenue leading to a crescent of buildings with a column in the centre; it is noticeable that all the symbols used in the decoration are of purely Roman character. M. Harant takes the half-ruined porch of Saint-Gille-du-Gard as the centre for a picturesque

grouping of imaginary Romanesque remains, doing for this school of architecture much what Pannini did for classic ruins; the experiment was, perhaps, hardly worth making. A rather interesting scheme is that by M. Carbonnier for the *aménagement* of the "Ile des Vierges" in the Seine, with plantations round the margin and an axial garden in the centre, with a circular *place* opposite the point where the bridge is placed, and another circular opening with a fountain at the other end of the garden vista. Another scheme is one by M. Giraud for "A Prefecture in the South of France," evidently a bid for a commission of the kind whenever the occasion arises. The Government might do worse, for the plan is really a very good one. To show that it can be arranged for any site, the author has even imagined an oblique line of road to which the façade has to be adapted; and he has had the novel idea of showing the principal elevation as it would appear both by day and night; in the latter case the lights of a reception at the Prefecture illumine the windows. This is an idea that might be carried further; to show that a building would look well by night as well as by day would be a new feature in the illustration of architectural designs.

To come to some of the illustrations of actual working architecture, this is illustrated chiefly in theatres and in



DESIGN FOR NEW CHURCH IN THE RUE DE VANVES, PARIS.

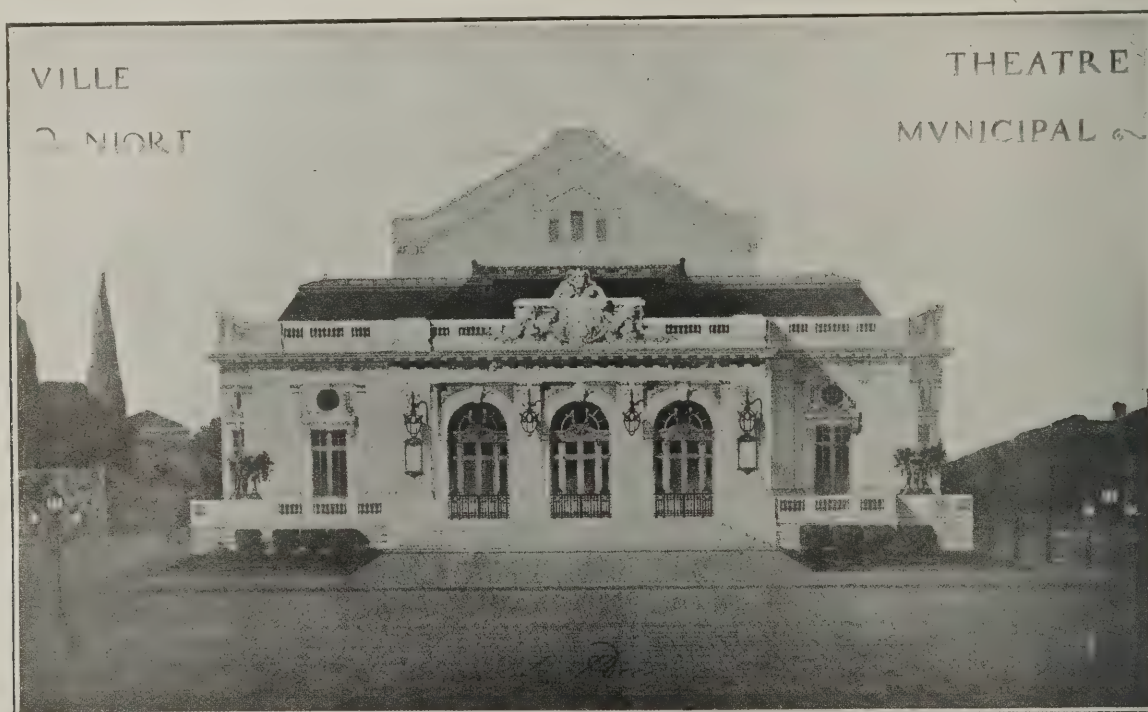
PIERRE SARDOU, ARCHITECT. (Salon, 1912.)

town and country houses. Church architecture is but little illustrated, modern church architecture that is to say, for the illustrations of ancient ecclesiastical architecture are numerous and often very fine; and it seems rather odd that while French architects take so much pleasure in illustrating ancient mediæval architecture they do so little in modern work that is at all like it; for French modern Gothic is a painful kind of business, concerning which the less said the better. The tendency is rather towards a kind of neo-Byzantine. M. Sardou's Parish church of Notre-Dame-de-Rosaire, at Paris, is an example; the drawing of the chancel shows a great brick chancel arch and plain brick walls with a timber roof, a Byzantine reredos, and a circular window at the east end. The west front, of which we give an illustration, has a good deal of character, though it will seem rather out of place among the usual types of Paris architecture. There is no other design for a modern church that is worth mentioning.

One of the best modern architectural designs is that by M. Martineau for the new theatre at Niort; apparently not the accepted one, which is also exhibited; but both plan and design of this are better, and one cannot

plan with a wide axial corridor, the offices being in a wing branching out at an oblique angle from a corner of the main block; this is a Gothic house—not very good Gothic, but better than that of the modern French churches; an arcade of pointed arches forms a loggia round two sides, and over the pointed-arch carriage porch rises a tower very like a Late Gothic church tower. Another still more important house at Buenos Aires is that designed by the well-known Paris architect M. Sortais, for a doctor at Buenos Aires. This is a house on an angle site, with a large circular hall forming the pivot of the plan. A corridor tangent, so to speak, to this circular hall forms at the other end a tangent, on the reverse side, to another circular hall. It seems an odd way of making a corridor enter upon a circle, but the plan as a whole is a somewhat remarkable one, and quite the reverse of commonplace.

The average-sized country house of France is, as our readers are probably aware, a kind of thing that is a terror to English taste. The French seem quite unable to appreciate the charm of simplicity and repose in a country residence, and to be a proper country "villa"



DESIGN FOR THEATRE AT NIORT. M. MARTINEAU, ARCHITECT.
(Salon, 1912.)

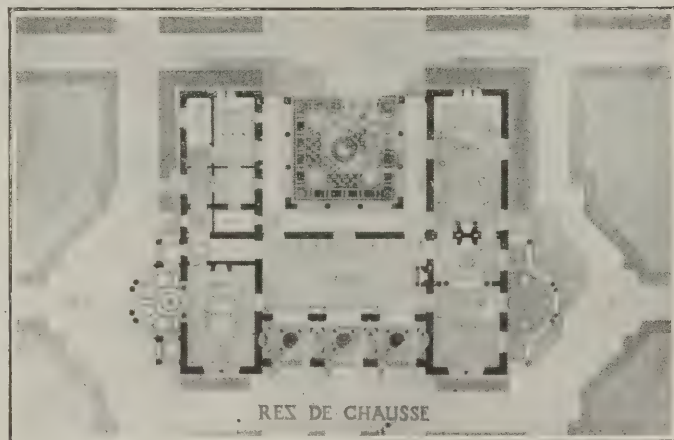
understand why the other was preferred to it. We give the ground-floor plan and principal elevation; it will be seen on the plan how effective is the treatment of the entrance hall. Among the designs for house architecture some of the most important are for Buenos Aires and other foreign sites. M. Dupuy (pupil of M. Laloux) exhibits an elaborate set of drawings for a "Ville d'Hiver" on the banks of the Parana. It looks like a kind of double hotel, a large rectangular block and a smaller square block, connected by a long pergola. The architectural details are not very good. The drawings give rather the impression of being a project only, they are so exceedingly ambitious; but some photographs of the work in progress (not very advanced, apparently) show that it is a practical scheme, or is so intended. M. Martin Noel's design for a villa on the Tigre (Argentine Republic) is finely planned to get rather a stately effect in a comparatively small house. We give the plan and principal elevation. The festoon decoration under the eaves, which comes out dark in the plate, is really painted on the wall surface in a warm buff tint. The architect is a native of Buenos Aires. Another house at Buenos Aires is a large one by a French architect, M. Fourniez, which has a rather fine

(a word only too appropriate in this case) a house must have enormous high-pitched roofs and be full of angles, elbows, projections, and tricks and dodges of all kinds. There are a good many of these at the Salon, and every one looks worse than the last. In many things we are inferior to the French in architecture, but in this point at least of good taste and repose in the style of our country houses we can certainly claim a marked superiority to them. The only country house design in the Salon on which we could look with any pleasure is M. Gagey's Villa of Heussaye, Côtes du Nord. This is a seaside house, boldly set on a high rock; and the exposed situation, apparently, has induced the architect to treat it in the most solid manner, with rubble masonry in thick mortar, with plain round-headed windows and chimneys with high square plain stalks. As a whole, this is a house which has the character suitable to an exposed seaside situation—strong and plain, and not bedizened with restless ornament; but it is rare to find such a design among the Salon country-house drawings. There is one design, however, not for a dwelling-house but for a dairy farm (*châlet de fromagerie*) in the Jura, in which the

picturesque form of the high roof is used rather successfully; the arrangement of the long slope of the roof seems to fall in naturally with the requirements of the building, which is treated very simply, and looks like what it is meant for—a farmhouse among the mountains.

There are two models among the exhibits at the Salon, both by the same architect, M. Demoriane; these are funeral monuments, and one of them is of special interest as being a monument to the late eminent architect Ginain. It is a most satisfactory design; the bronze bust of the late architect is placed on the top of a slightly pyramidal stele, the side projections of which turn round at the top into a kind of Ionic volute at each side, connected by a wreath which droops across the face of the stele. In front is the gravestone, with a simple cross worked on the top of it. The other monument, a family one, to be erected at Père-Lachaise, is a large alcove with a round barrel vault and coupled Ionic columns flanking the entrance; in the wall at the back is a cross worked into a circular pierced panel. It is closed in front by a pair of gilt metal gates of bold design.

Among the drawings which are illustrations of ancient work, one of the most interesting is a complete set of the ancient Byzantine church of Zeirek-Djambi at Constantinople by M. Adolphe Thiers (pupil of M. Pascal). This seems to be really three churches side by side, each with its apse; it is laid out with the most sublime disregard of parallelism or right angles, and has four domes sown over it anyhow, three of them elliptical on plan, one only circular. Another interesting set is that of the church of Saint-Thyrse, at Châteauvieux (Haute-Vienne); this has a Romanesque choir and transepts and a Gothic nave with no clear-storey, but on one side of the nave a series of small openings into the space above the aisle vault. It is an example of the odd things that are to be found in early French churches. The drawings are the work of M. Pontraud. M. Rauber's "studies of the ancient cloisters at Reims" are a fine set of drawings, tinted in Indian ink, of Romanesque detail. Then M. Roustan gives us a set of water-colour drawings of some of the

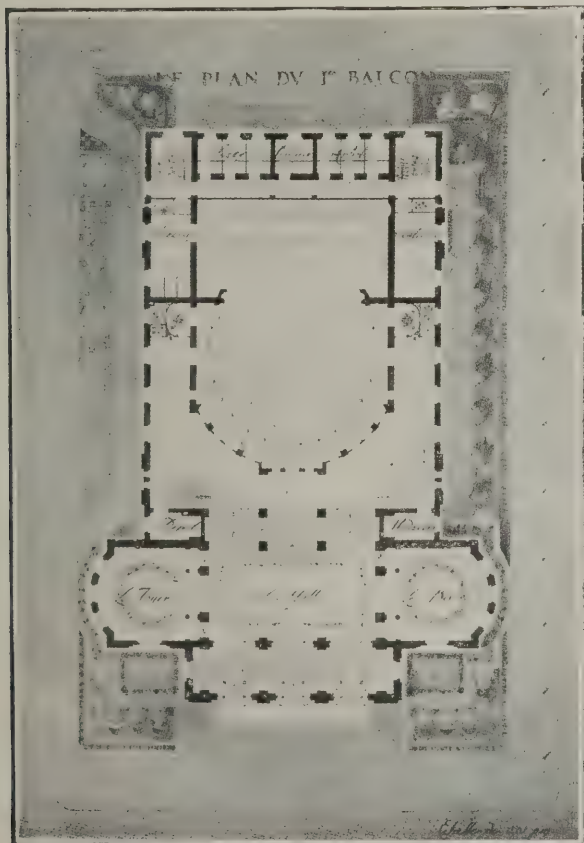


Ground-floor Plan.

A VILLA IN THE ARGENTINE REPUBLIC. MARTIN NOËL,
ARCHITECT. (Salon, 1912.)

ancient fountains of the Var district. These are all pretty much of the same type of design—a kind of urn supported on a thick stone stem rising out of a basin; they apparently represent a type of design peculiar to the country. M. Prieur exhibits a fine set of drawings of the tower and spire of Senlis Cathedral, including a detail drawing of the base of the spire with plans and sections. M. Bray, another pupil of M. Pascal, exhibits a drawing of "Le Grand-Orgue de l'Eglise Notre Dame de Moret." This is a drawing of an old sixteenth century organ-case, with open-work ornament of Renaissance character in front of the tops of the pipes. It represents the old organ in its present condition. Some of the front pipes are gone, and apparently the church has not been at the trouble to replace them. M. Gautier (pupil of M. Laloux) exhibits drawings of a most curious church, the chapel of Locquirec (Finistère). At the west end is a kind of double tower; a square tower linked with a circular one too large to be called a turret. The square tower has an open lantern on it in two bays, each containing a bell, and over this a short spire of quite Gothic character, with crockets up the angles, but which is definitely dated 1691. Without the written statement it would be difficult to assign a date to this odd mingling of styles.

Among other things noticeable we should not pass over M. Dumail's "Une école supérieure d'aviation militaire," for the sake of the excellent architectural design of the centre pavilion, a kind of revival of French eighteenth-century classic design; and also one of the "projects," by M. Delaon (pupil of M. Laloux), for a "station militaire, nautique et aéronautique." This is one of the



THEATRE AT NIORT. M. MARTINEAU, ARCHITECT.
(Salon, 1912.)

imaginary schemes, too ambitious to be ever carried out, but the principal elevation is a most impressive drawing, as an example of the effect of composition in strongly marked horizontal lines; it is powerfully tinted in a most effective manner, and is really a remarkable example of strong composition.

One of the most effective drawings in the architectural section is one by M. Hulot, giving a view of the gardens of the Villa Medici as seen from the Loggia, with the columns in the foreground. Whether by accident or intention, the picture-galleries of the Salon contain a large and fine painting by M. G. P. Leroux of exactly the same scene, "Diner dans une Villa Romaine," only that this is a twilight picture treated in colour and on a much larger scale.

The Drawings at the Architectural Association.

THE drawings which were exhibited at the Members' Smoking Concert on May 3rd, and which remained on view during the whole of last week, formed a remarkable collection, of special interest to students, because they were for the most part arranged on the principle of exhibiting photographs of executed work together with some of the working drawings from which the buildings were executed. Thus we had the representation of the work as completed, coupled with the drawings from which the finished result was brought about. There could not be a better way of studying contemporary architecture.

Among the sets of drawings one of the most interesting was Mr. Herbert Baker's for the Union Buildings at Pretoria. The plan is an exceedingly fine one, consisting of two rectangular blocks of buildings, symmetrically disposed on each side of the centre line, and connected by a grand semi-circular colonnade accentuated at each side by a tower and cupola at the junction with the rectangular blocks, each of which has a square columned hall as its centre. There could hardly be a better example of the dignified effect to be obtained by the symmetrical and axial disposition of a large building. Among the working drawings of detail elevation on a large scale were those by Sir Ernest George and Mr. Yeates for the Royal Academy of Music, those by Mr. Robert Atkinson for his design for the Manchester Art Gallery, and those by Mr. Greenslade for the National Library of Wales. Messrs. Forsyth and Maule exhibited the drawings of a brick church at Ijmuiden (if we read the name right)—we presume in Holland—showing among other details a mullioned and transomed window built up out of ordinary brickwork, the transoms forming flat arches. Among the smaller and simpler works was Mr. Spooner's chapel at Letchworth, a kind of brick Romanesque with a large circular window in the gable; and Mr. Curtis Green's very simple, almost barn-like church with a wooden roof designed on mediæval principles, in which the tie-beam is not a tie but a heavy beam supporting the part of the construction above it (picturesque but not scientific), and on which are supported, apparently, two carved wooden figures; the result is curious but certainly interesting. Mr. A. T. Bolton's house, "Hartwood Edge," showed a picturesque combination of rubble stone wall with brick strings and archivolt.

Among other drawings and photographs shown were some of domestic work by Mr. Ernest Newton, Mr. Guy Dawber, and Mr. Lutyens.

Besides the numerous working drawings there were some of the carefully prepared detail elevations of Sir Aston Webb's College of Science, and of the Admiralty buildings at the east end of the Victoria Memorial road, drawings originally prepared for exhibition at the Royal Academy, which we were glad to have an opportunity of seeing again.

There were many others which we have not space to mention specially; but the exhibition as a whole was a remarkable one, on which the Association is to be congratulated.

Proposed Gallery of Modern Foreign Art.

AN interesting newspaper correspondence is taking place with reference to the desirability of providing in London some permanent gallery of contemporary or modern foreign art, perhaps as an annexe to the Tate Gallery, which accords hospitality to British artists only, and is, therefore, as some suppose, lamentably incomplete as an exhibition of modern art. We want, in short, something akin to the catholicity of the Luxembourg. At present we incur the odium, as well as suffer the æsthetic consequences, of being too exclusively insular. It has been suggested that it would not be difficult to set aside or build a few rooms as an adjunct to the Tate Gallery, each room to be allocated to a particular country. "In this way," it is urged, "the British public would have an opportunity of learning something of contemporary foreign art, and of comparing the various schools with the British school." It is only in this way that due recognition of the unity of art can be made, and the art interaction between nations can become manifest. The present demand for greater eclecticism is probably an unconscious reverberation of the interest in foreign art that has been fostered by the trend of exhibitions at the various private galleries, but more particularly by the collections of foreign contemporary art that usually find a place at the White City and similar popular show-places. It is rather a scandal that London has not long ago extended to foreign art the hospitality of a permanent building. One consideration that may have militated against such a provision may have been knowledge of the fallibility of contemporary judgment in art. The picture that is to-day hailed as a masterpiece may to-morrow be despised and rejected. The Tate Gallery contains, consequently, many pictures that, famous in their hour, are no longer considered to be worth the wall-space they occupy. But while we are thus enlarging our borders, it would be worth while to make provision for an adequate collection of architectural examples, British and foreign; for while very few members of the general public would go out of their way to visit an exclusively architectural collection, there are thousands who would be glad to inspect it if it formed an adjunct to a public picture gallery.

The Question of Waterloo Bridge.

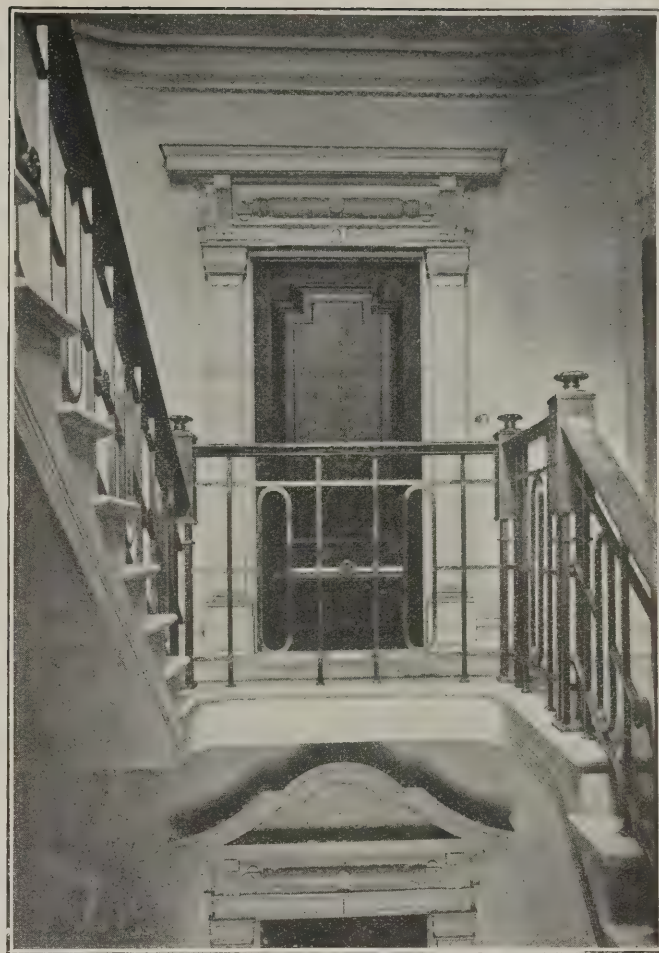
THOSE who are familiar with the congested state of traffic on Waterloo Bridge will agree that something very drastic will have to be done in the near future in order to get rid of the present state of affairs and put an end to the annoyance and loss of time caused to foot-passengers and vehicles alike. Waterloo Bridge is unquestionably the finest bridge across the Thames. There is a serenity about its design, massively carried out in granite, which makes it a noble object. We should be extremely sorry to see it superseded by a steel structure. At the same time the fact must be faced that its width is wholly inadequate to take the amount of traffic it now has to bear. Roadway and pavements both need to be double their present width. And if it come to a choice of two evils, far better have a mediocre bridge of ample width (like Westminster Bridge) than a splendid-looking bridge most inconveniently narrow. But surely the two ends could be secured by swallowing up the space known as Lancaster Place—a useless haven of roadway—and taking down one side of Waterloo Bridge to line with the existing block of houses on the west side. Thus we might still preserve the appearance of Waterloo Bridge, while making it wide enough to take the traffic. Its arches might very well be left alone, for the reason that the Thames is a highway for mere barges and tugs, which can pass through the present openings with ease: whereas some of the single-span votaries would lead one to imagine that passage had to be found for mighty ships.

ARCHITECTS OF THE DAY.

MESSRS. W. AND E. HUNT.

THE controversy as to what might form the basis of an English school of architecture, expressing the requirements and conditions of the present day, is an interminable one. The reason, perhaps, is to be found in the fact that architects in this country are too hesitating, too much concerned with hopes and fears, whereas in America—to draw a comparison—they know exactly what they want and they go direct towards their goal.

The last century witnessed a battle of the styles fought out with abundance of enthusiasm and acrimony, and if it may be taken that the Gothicists came out victorious, we cannot feel any satisfaction in the legacy that has come down to us. As applied to secular buildings, indeed, Gothic has gone right out of vogue, and we may be thankful that it has, for a more distressing type of building than that which was produced by the rank and file of architects who came after the first force of the Gothic Revival had spent itself could hardly be imagined. Later we were made familiar with a type of design called "Free Classic," a term meaning nothing in particular, and therefore well adapted to the hybrid architecture it stood for. A more respectable class of work was labelled as "carrying on the tradition of the English Renaissance." The character of this work seemed to be considered eminently appropriate for competitive designs for public buildings, and, as such, it might well be called English Competition Classic. It was certainly far better than the medleys it supplanted, but its merits were of a very mixed kind, for, while making abundant use of the Orders as decorative additions to buildings, there was no broad scheme underlying it, and it was generally associated with haphazard planning. At the present time there is a revival of Greek work, that is to say, the main lines of Greek work are accepted as the basis on which to form modern design. With this movement we have a great deal of sympathy, for the reason that those who are foremost in promoting it have a clear idea of what they are seeking after, and the work they produce exhibits ability of a high order. It is manifestly inappropriate to make mere replicas of Greek buildings, as was done at the beginning of the nineteenth century, when Nonconformist chapels were erected in the semblance of Greek temples; but the reasonable application of Greek forms in buildings of to-day is worthy of the whole support of architects. Among such as are working on lines like these we may take MESSRS. WILLIAM and EDWARD HUNT. A representative series of buildings designed by this firm of architects is



DETAIL OF STAIRCASE, No. 35, HARLEY STREET, LONDON.

here reproduced, and from these it will be seen that in their public buildings Messrs. HUNT have infused an essentially modern spirit into the Greek forms they have adopted as the basis of their designs. The building in Mortimer Street is a good example of this. Here we see a scholarly façade with the Order applied in a thoroughly legitimate way, while the detail shows abundant freshness. It is Neo-Grec work of similar character to Cockerell's, but with more liveliness. A good example of this is afforded by the doorway to No. 35, Harley Street, shown on the Centre Plate in this issue. This is an admirable piece of work—ample testimony to the claim that Neo-Grec need not be cold and formal.

Mr. WILLIAM HUNT and Mr. EDWARD HUNT both have strong ideas in regard to the relation of architecture to social life. It has been truly said that "out of a hideous city a hideous humanity grows," and surely the converse is true, so that a city formed of fine roads and beautiful buildings must tend towards an expanding nobility of thought and a higher view of life generally.

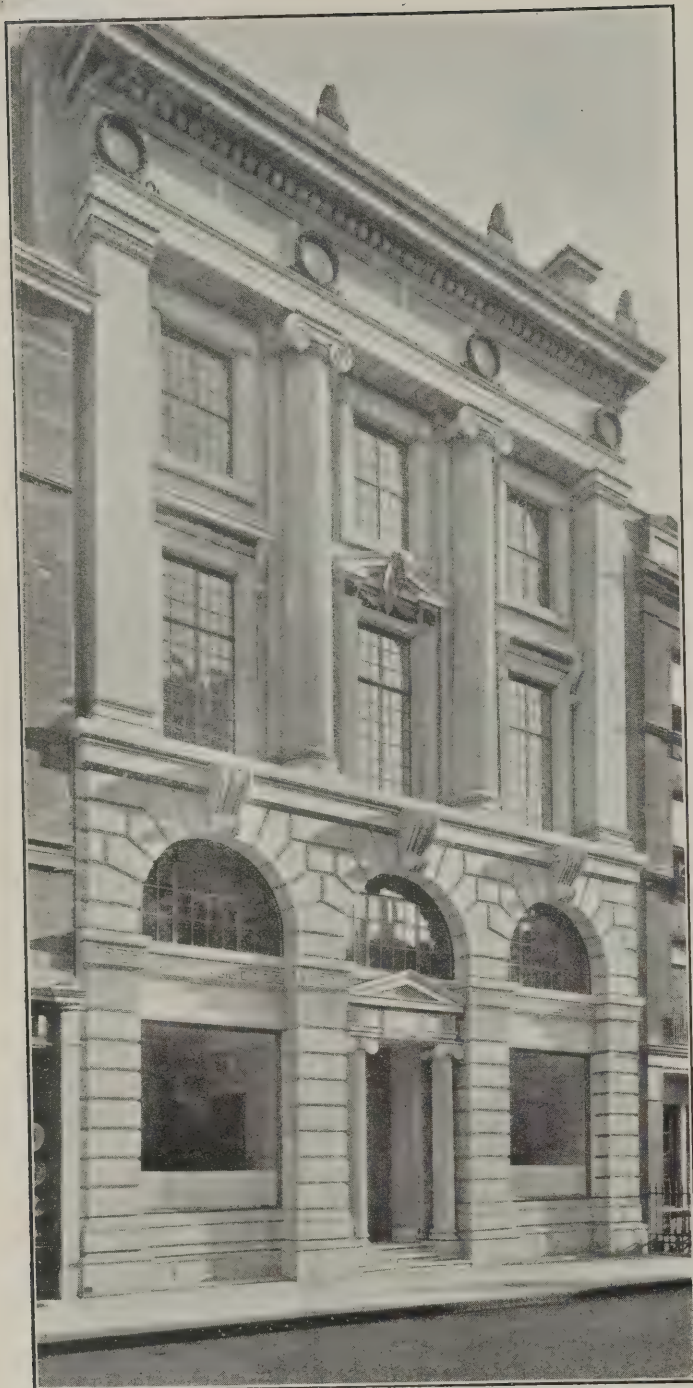
They are of opinion that the time has come when the Government of this country should consider seriously the idea of forming a Ministry of Fine Arts, which should control the general formation and the improvement of our cities and towns, and then the relationship of new buildings to such formation; while last, but not least, there should be a certain governance in regard to the exterior design of each separate building. They think that every city, town, county borough, or district could be represented by a small committee or committees of architects, and perhaps other persons of known artistic ability in regard to design, who, having the



EDWARD HUNT.



WILLIAM HUNT.

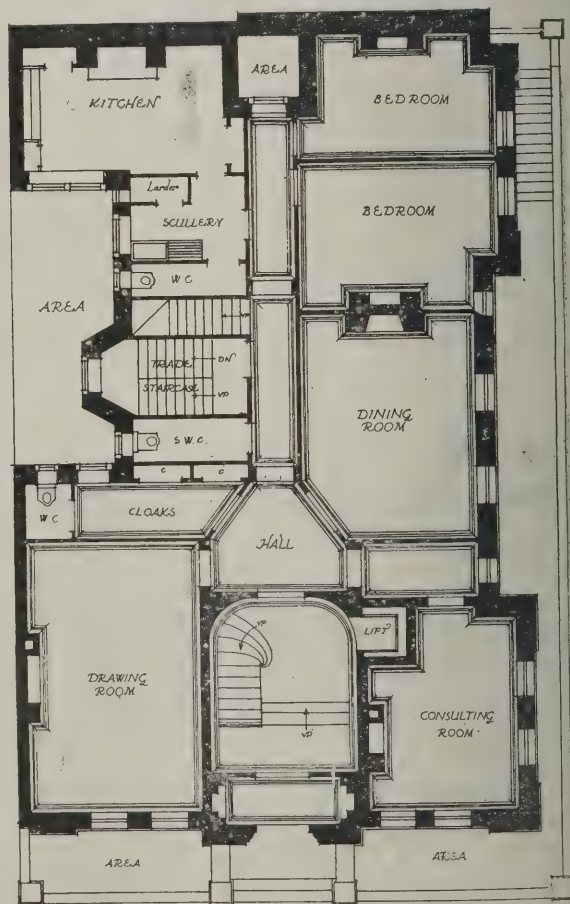


BUSINESS PREMISES, No. 93, MORTIMER STREET, LONDON.
WILLIAM AND EDWARD HUNT, ARCHITECTS.

building world after leaving King's College, London, and while studying architecture he joined his father at "Donington House," and is now in partnership with him. Some particulars of the buildings designed by them are given below:—

No. 93, Mortimer Street, London, W.

This building (a perspective of which is exhibited at this year's Academy) occupies the site of the old German Athenæum Club, and has been designed with the accommodation of two halls, the principal one being on the ground floor, with entrance from Mortimer Street through a corridor, on each side of which are showrooms and offices. The remainder of the building is planned for showrooms, offices, cloakrooms, and caretaker's quarters. The elevations are of Portland stone from the Western quarry, that to Mortimer Street having a shield charged with the Howard de Walden arms and other ornaments in bronze. The roofs are laid with U-section red tiles and green Westmoreland slates. The windows have wrought-iron casements, the circular roof-lights being also of iron. The whole of the construction is fire-resisting. Internally the building is finished with plaster, and joinery of oak. The pavings to the corridors are of white Pentelikon, green Tinos, and Corallo marbles. Pentelikon marble is used also for the staircase, which has a steel and bronze balustrade. The hall and other apartments on the ground floor are laid with oak-block flooring. Ventilation is controlled by a simple extract method with air-ducts from the ceilings, the hall in the basement having longitudinal ducts carried in the ground floor, communicating with extract flues rising to the roof. The heating is by a low-pressure hot-water installation, with radiators and pipes of wrought iron. The latter are taken in four circulations and carried through heat-resisting chases and ducts in the floors, the radiators being protected with steel and bronze cases.



HARLEY STREET
GROUND FLOOR.

BLOCK OF FLATS, No. 35, HARLEY STREET, LONDON.

work so much at heart, would be willing to serve without monetary reward, or at all events at a nominal fee, and before whom all exterior designs, including materials, would have to be passed before being carried out.

Education, they think, should proceed generally upon the lines of the Ecole des Beaux Arts, but arranged in such a way that domestic work and the design of buildings for business and other uses should have their place as well as large and magnificent projects.

Mr. WILLIAM HUNT, it may be added, started in practice in 1881 in the Adelphi, moving in 1897 to his present offices in "Donington House," Norfolk Street, Strand. During this time he had been responsible for a great amount of domestic work in various parts, including Hampstead, Fognal, Streatham, and in the West End. He is Justice of the Peace for the County of London, and represents Wandsworth on the London County Council, where he has served as chairman of the Main Drainage of London and other Committees.

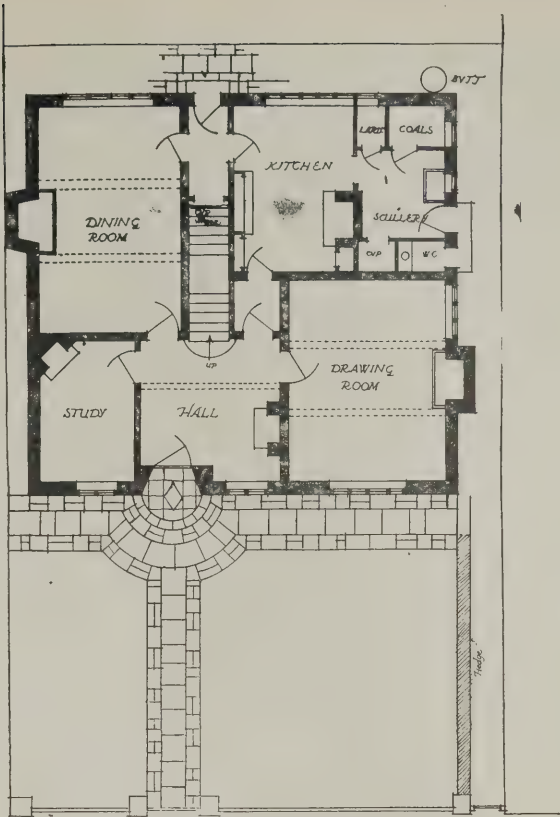
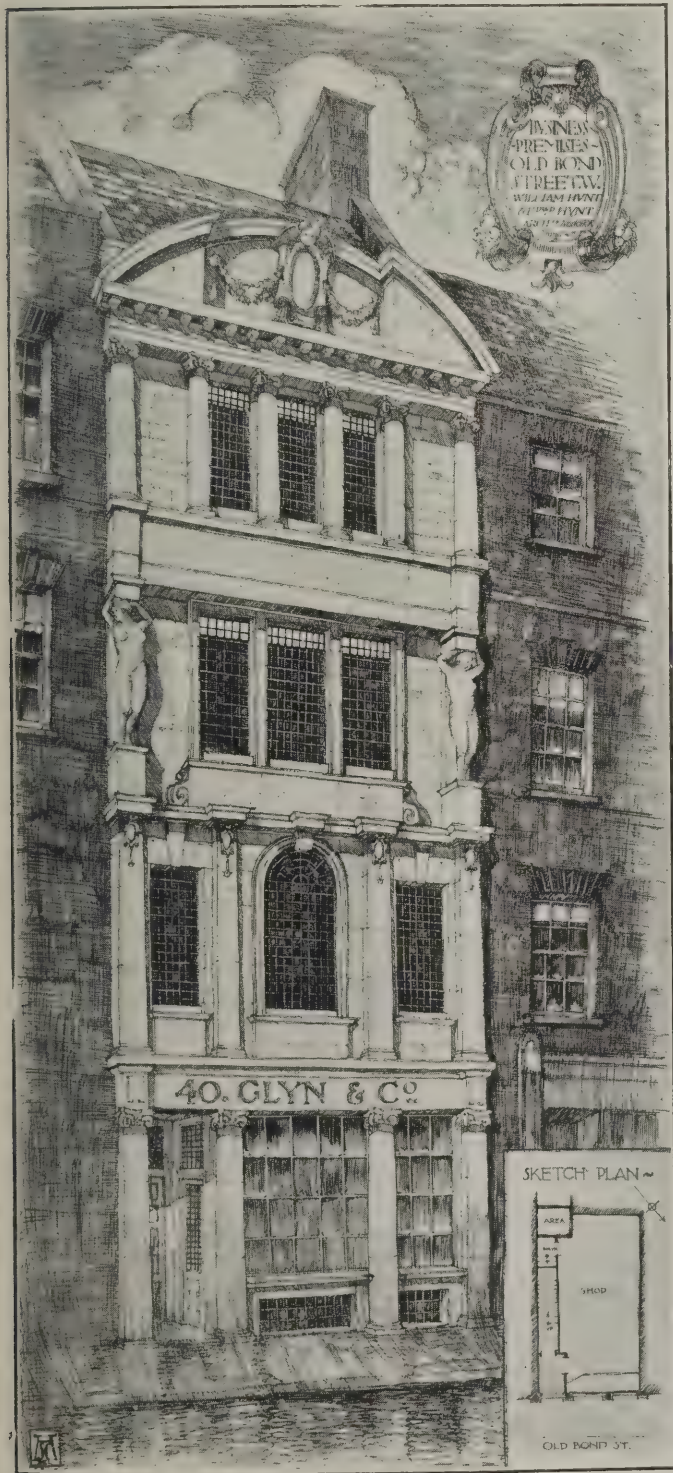
Mr. EDWARD HUNT, his son, became engaged in the

No. 35, Harley Street, London, W.

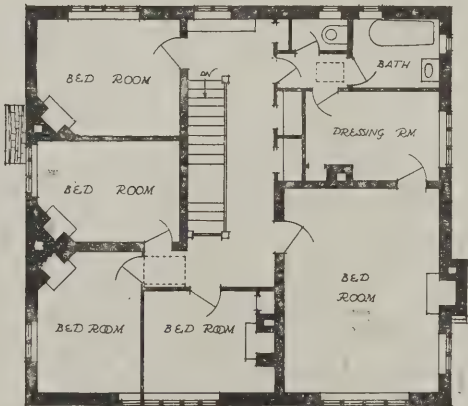
This is a block of flats, just completed. The building occupies a site at the corner of Harley Street and Queen Anne Street. The elevations are carried out in Portland stone, the main entrance having a little colour introduced by the use of blue Forest of Dean stone. The railings are of wrought iron, and the doors of oak with bronze fittings. Internally, the main staircase shows a simple treatment of white Pentelikon marble, with landings of that and other marbles, while the balustrade is of steel and bronze. The detailing throughout is very pleasing. A drawing of the building was shown at last year's Royal Academy exhibition.

Town House, Wimpole Street, W.

This house is not yet started. It is to be built of white Portland stone and 2 in. grey-red bricks with flat joints,



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SCALE OF FEET

"REDLANDS," WIMBLEDON.

the roof to be of lead and grey-green slates. The casements will be painted a dove grey colour.

Business Premises, Old Bond Street, London, W.

These premises, now numbered 44, are a good example of what can be done, in skilful hands, with a narrow strip of frontage occupied by a shop on the ground floor and by offices above. The façade is carried out in Portland stone with wrought-iron windows and fanlights. The perspective view here reproduced was exhibited at the Royal Academy some years ago, and is itself a clever piece of penmanship.

Additions to the Balham Constitutional Club.

This little building was designed for use as an annexe to the club concert hall and smoking room. Externally it

is faced with hand-made red bricks with a wide flat joint. The entablature is in reinforced concrete, finished in stucco and coloured, while the windows and doors are of deal painted a cream tone. The roof is of glass with lead-covered iron bars. Internally the walls are finished with a simple plaster treatment of pilasters and panels, the floor being laid with dark red quarries.

"Redlands," Wimbledon.

This house, built for Mr. Charles H. Dewey, is situated close to Wimbledon Common. It is built of red hand-made bricks, with dark red tiles on the roofs. The casements are of wrought-iron with leaded lights, the frames being of deal painted white. The internal

arrangement is shown by the plans. The principal bedroom, dressing-room, bathroom, and lavatory are provided *en suite*, and shut off from the other part of the house. The walls are distempered, and the joinery is of Suffolk oak, wax-polished, the fireplaces being of red brickwork.

Group of Three Houses at Wimbledon.

These houses are to be built of rough stock bricks covered with stucco coloured creamy white, and having a slightly projecting base of hand-made bricks of a colour varying from deep red to dull purple, the quoins being similar. The window-frames are to be painted a cream tone and the doors bluish green.



"REDLANDS," WIMBLEDON: ENTRANCE.

WILLIAM AND EDWARD HUNT, ARCHITECTS.

"Redlands," Haslemere.

This house has not yet been erected. The perspective reproduced has been exhibited at the Royal Academy.

Cottage Flats, Putney.

These cottage flats, in Oakhill Road, are faced with 2-in. Dutch bricks, with a wide flat joint. The windows are of deal painted white and green, and the roofs are covered with dark red tiles.

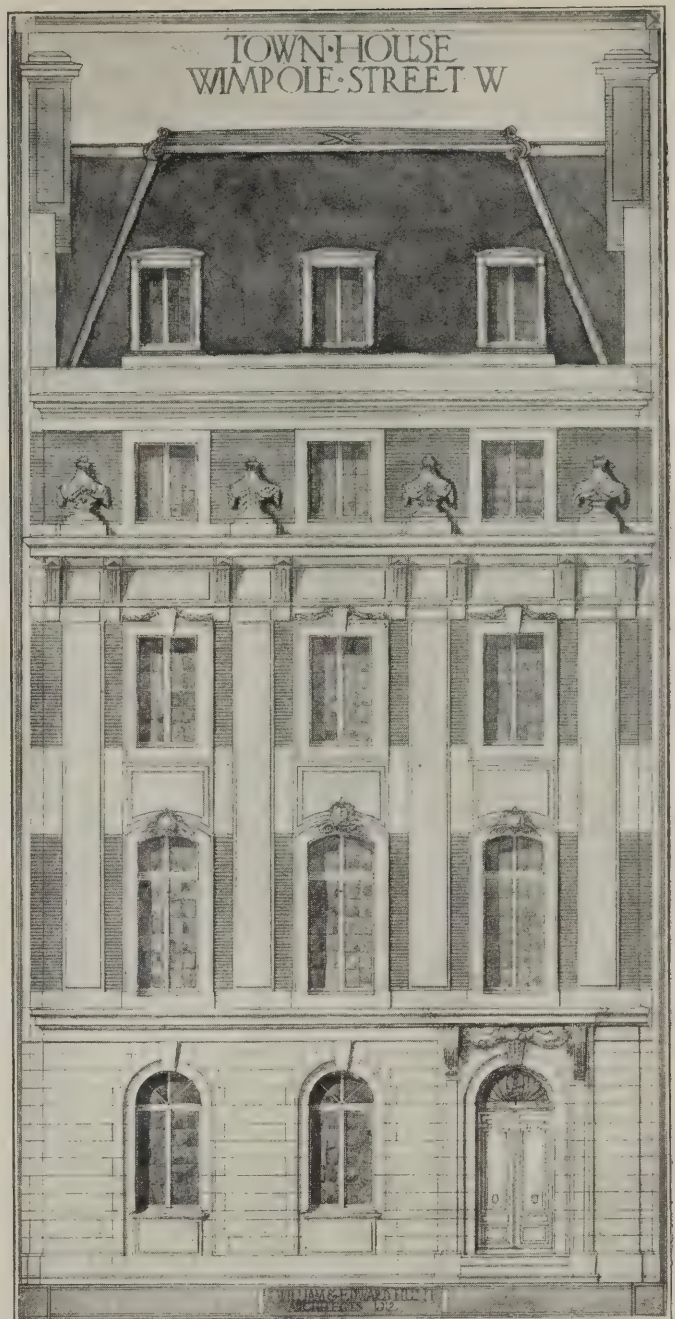
New Municipal Buildings, Marylebone, London.

This was a design submitted in competition some months ago. It shows a dignified use of the Ionic Order, with just sufficient variety in the detail to give it interest.

PORTINSCALE BRIDGE AND THE GROUTING MACHINE.

PERIODICALLY a dispute arises over some old stone bridge in a country place which, by reason of its picturesqueness, has become endeared to residents and visitors. In these cases the usual statement is made, that the bridge is in a dangerous condition—generally because of the traffic of motor cars and motor lorries over it—and the ubiquitous local councillor overflowing with "good common-sense" is always eager to pull it down and substitute a steel bridge; thereby incidentally destroying some hundreds of years of association and at the same time providing something painfully out of keeping with the surrounding countryside. And when anyone suggests that there is no necessity to do so, he is told that his ideas are all stuff and nonsense. This is just what has happened in the case of Portinscale Bridge, in Cumberland. From all accounts this is an old bridge of much attractiveness, which, through modern wear and tear, has been rendered unstable. At the last meeting of the Cumberland County Council a motion was brought forward "that the County Council instruct their County Surveyor to proceed with the grouting of Portinscale Bridge according to Mr. Fox's report, and to raise the gradients on either side of the bridge as far as possible." This motion was eventually withdrawn on the understanding that the matter be left over till the end of the summer, and that meanwhile the Highways Committee should look after the bridge: but the point of the matter is, that the Chairman of the Council spoke of the resolution to grout the bridge as "the most preposterous ever brought before the Council." That the proposal is not in any way preposterous may be proved by a few facts about the grouting machine and its application. Opportunely we find these set forth in an article by Mr. Francis Fox himself in the May issue of *The Architectural Review*. First, it may be explained that the grouting machine, originally invented by the late Mr. Greathead for use in the electric tube railways of London, consists of an iron receiver or reservoir into which, by means of pumps, air can be forced under any pressure up to 100 lb. to the inch. This receiver is connected by a flexible tube to another portion of the apparatus called the "grouting pan," which is, in fact, a churn furnished with a handle and spindle to which are attached arms or beaters. The proper proportions of cement and water, and in certain cases sand, are then placed inside, the lid is screwed down, and the contents are churned up into the consistency of cream. This is now ready to be blown into the crack, the mouth of which on either side of the wall has meanwhile been clayed up to prevent the grout from escaping. The compressed air is then admitted to the grouting pan, and so soon as the necessary valve is opened the contents are discharged into the wall.

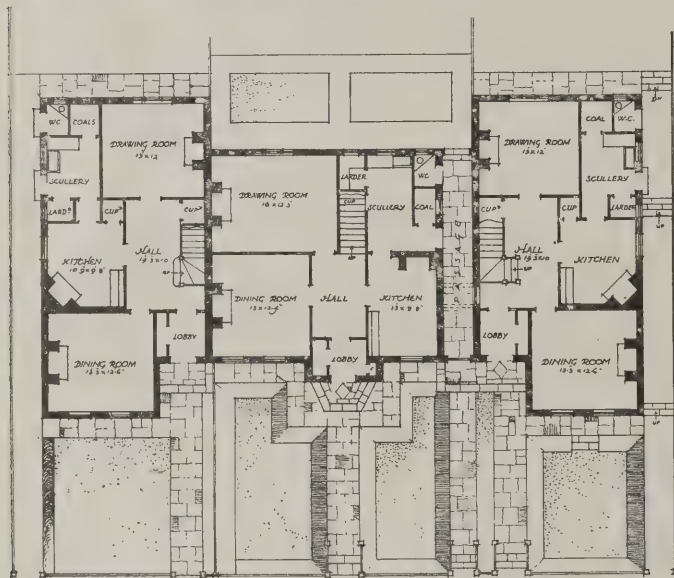
"Recognising the great utility and value of the machine," says Mr. Fox, "I decided to apply it to the saving of old buildings, and thus, having at command an apparatus by



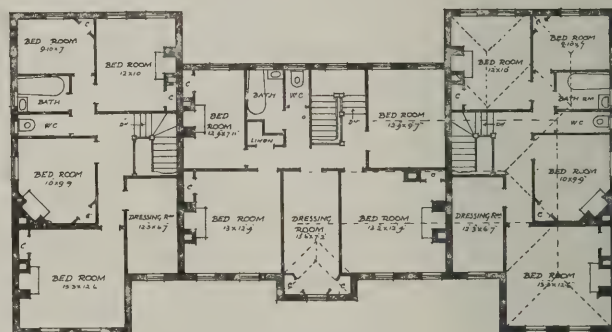
WILLIAM AND EDWARD HUNT, ARCHITECTS.

which cement can be blown right into the heart of any structure, whereby all the loose particles of stone and the opposite sides of the crack can be agglutinated together, the power of repairing injured buildings without being compelled to pull them down is secured. The expense of grouting is very small, and does not generally amount to one-fifteenth or even one-twentieth of the cost of pulling down and rebuilding. From the æsthetic point of view the employment of this valuable apparatus is most important by reason of the fact that the appearance of a structure is not affected, not a stone has to be altered, and even the very moss can be left untouched."

It has been successfully used in many important old buildings, more especially churches and cathedrals, and has been applied with equal success to several old bridges. The charming bridges over the river at Grange on Derwentwater were in jeopardy to such an extent that when any vehicle passed over them the stones could be heard to move, and small pieces of stone and mortar trickled down in the interior. They were, however, subjected to treatment by the grouting machine, with this admirable result, that although the old appearance of the masonry was unaffected, not a stone being removed, the



GROUND FLOOR PLAN.
Scale of Feet. 0 10 20 30 40 50



FIRST FLOOR PLAN

bridges are to-day monolithic, and can be traversed by the heaviest traction engines. And the "Auld Brig o' Ayr" has been saved and made good for centuries to come by similar operations. So that there is nothing "preposterous" in the idea of grouting Portinscale Bridge, and we hope that the structure will eventually be preserved by this method.

An Architectural Entrance Scholarship.

A YEAR or two ago Professor C. H. Reilly, of the School of Architecture, Liverpool University, suggested to the Ravenhead Brick Co., of St. Helens, that they should wire-cut the face of their stock-bricks, as they already did the bed, and so modify the

texture by avoiding the splashes of alternate white and pink which come with the pressing. The firm in question took up the idea very keenly, and have now produced a brick with a good rough texture and colour at a price very little in advance of the ordinary stock-brick of the neighbourhood, which they call the Ravenhead Rustic Brick. These bricks have already won for themselves a large and ready sale, and, in acknowledgment, the Ravenhead Brick Co. have very generously offered to the School of Architecture an Open Entrance Scholarship of £30 a year for two years. They thus appear to have established an excellent precedent, for, apparently, this is the first entrance scholarship in any English school of architecture. It is open to anyone between the years of 18 and 23 on June 1st next, and will be awarded on drawings submitted, with an examination, if that is thought necessary. Particulars of the Scholarship are given in another part of the present issue.



CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief, and to write on one side only of the paper.

Registration of Architects.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In reference to the letter on Registration signed by Mr. A. W. S. Cross and Mr. George Hubbard, which appeared in your issue for April 27th, we shall be glad if you will be good enough to publish our letter to the R.I.B.A. "Journal," which appeared in the issue of that journal dated April 13th, and to which Messrs. Cross and Hubbard's letter is an answer.

ALBERT W. MOORE.
HERBERT SHEPHERD.

The letter which our correspondents desire us to reprint appears below:—

SIR,—Our Committee's attention has been drawn to a letter by Mr. Hioris published in the "Journal" of February 10th, in which he challenges the existence of a widely expressed desire in the profession for Registration. Such a view must be incomprehensible to those who have followed with interest the course of events which led up to the unanimous adoption by the Institute of the Registration policy in 1907.

For some years previous to that date the whole profession was deeply stirred by the subject, inasmuch as it was painfully conscious of the encroachments which were—and are still—being made on legiti-

mate interests of the profession by unqualified persons and trading firms. The agitation culminated in a demonstration of opinion at the Institute's elections, when the "Registrationists" emphasised the demand for such a policy by electing a Registration Council in place of that which had previously opposed their ideas.

In order to attest the opinion of the profession, [a professional journal] conducted a plebiscite which resulted in a very large majority of practising architects in the United Kingdom voting in favour of Registration as the policy which met their most pressing requirements. The Institute could not be blind to such a strongly manifested desire, and therefore appointed a very strong committee of leading members of the Institute, representing all shades of opinion in regard to this question. The committee reported that after holding fifteen sittings and hearing the evidence and views of twenty-four architects from various parts of England, Scotland, and Ireland, they were unanimously impressed with the desire of many architects (especially those practising in the provinces) that a legal status should be given to duly qualified practitioners in architecture, and they went on to express their belief that in a short time the holding of a legal diploma would prove of professional value, and that such State recognition would encourage education and raise the qualifications of architects, and would at the same time avoid the temporary necessity of granting a statutory title to unqualified men.

The committee's unanimous report is to be found in the "Journal" of March 9th,

1907, which also contains the plan suggested by the committee for carrying their recommendations into effect. This report was adopted by the general body of members, and in due course resolutions were submitted and carried unanimously by the general body of members in March, 1907. These resolutions have subsequently been referred to as the "Mandate," since the passing of which the whole profession has regarded Parliamentary Registration of Architects, under the auspices of the Institute, as a foregone conclusion; but, as in the case of all such reforms, the rank and file go for the broad principle of the measure, and leave the general details to the executive body. In the present instance the profession, more particularly the members of the Institute, have left the details by which registration is to be carried into effect in the hands of the Council with that confidence which is in itself a great tribute to them as a body. If this confidence is to remain undisturbed the Council should at the earliest possible moment produce a really practicable Bill based upon the principles laid down in the Registration Committee's Report of 1906.

We are conscious that we carry the weight of well-considered and responsible opinion when we state that no well-wisher of the Institute would like to see it torn into factions again, and the bitter fight and excitement of former times revived; neither do we wish to see the Institute stultifying its position by showing any hesitation in carrying out the solemn obligations which the resolutions of March, 1907, entrusted to the governing body.



ADDITION TO BALHAM CONSTITUTIONAL CLUB. WILLIAM AND EDWARD HUNT, ARCHITECTS.

That the President and Council are loyal to these resolutions was plainly manifested by the following statement of the President at the business meeting of March 9th: "The Council," he said, "do not consider that the question of registration is still an open question. We consider that the Institute and Council are bound by the resolutions passed on March 4th, 1907. As to the Council's proposals of January 8th, these having been referred back for further consideration, the Council have appointed a strong committee to consider the matter and report on the subject. The Council will in due course report to the general body."

As "Registrationists" we are, in common with other members of the Institute, also in sympathy with that policy, keenly waiting for that report, for after the experience of recent years we confidently anticipate that the committee will recommend a somewhat broader and more tolerant registration scheme, commanding the support of all interested parties, whether professional or educational, than that which has so far led to nothing being done of a tangible nature or calculated to inspire confidence among "Registrationists."

If, however, there should exist an opinion in the Institute that the registration policy is no longer generally desired by the profession, let such an opinion be tested by an attempt to rescind these resolutions. We are convinced that the result would show that the demand for such a policy is more firmly rooted than ever.

ALBERT W. MOORE, F.R.I.B.A.
HERBERT SHEPHERD, A.R.I.B.A.
Hon. Secretaries Institute Members' Club.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

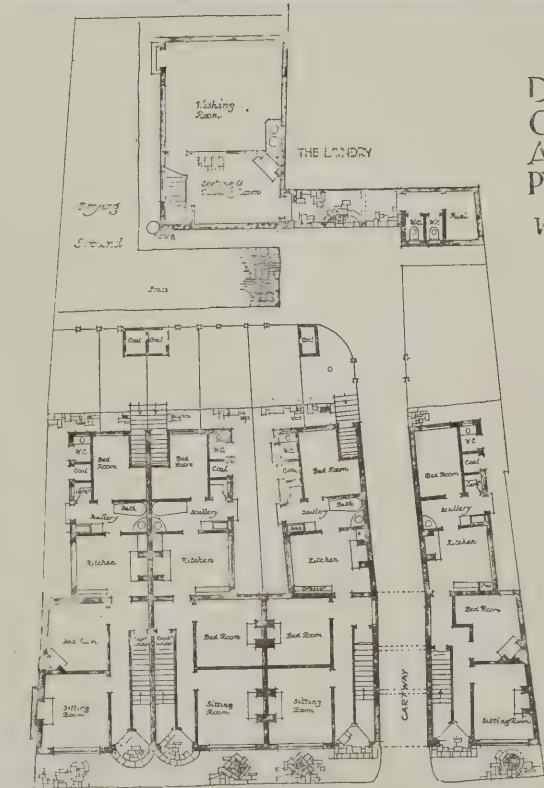
SIR,—You have been kind enough to publish one or two letters from us bearing, both directly and indirectly, upon the vital subject of Registration.

Some of our friends think that we have perhaps expressed ourselves more strongly than the circumstances warrant; but, to our minds, when we review the paucity of the results attained by the Institute after some five years' consideration, we are forced to the conclusion that the present serious position can only be satisfactorily dealt with by administering a drastic remedy.

The Institute, after much labour, has obtained a revision of its charter and by-laws so as to make it possible for the Society of Architects to be incorporated with the Institute. This labour has had a futile result, as the Institute, by a large majority, has now absolutely declined to sanction the incorporation of the Society. In fact, the compromise which was made between the Registrationists and anti-Registrationists has completely broken down, as was almost inevitable from its very inception.

No great cause has ever been won without a corresponding expenditure of energy, and we hope that the vast majority of the members of the Institute, who have the cause of Registration at heart, will not be discouraged by the fact that there is absolutely nothing to show for the immense amount of time which has been expended upon it.

Now is the opportunity to rub out the faint scratchings upon the slate which are generally unintelligible. What is wanted is a clean slate—on this should be mapped out in clear and unmistakable lines a programme framed to satisfy the members of the Institute, as well as all others whose



Ground Floor Plan

Scale of 1 inch = 10 feet

DESIGN FOR FOUR
COTTAGES & LAUNDRY
AT OAKHILL ROAD
PUTNEY, S.W. for Mr. J. Purdy Esq.
William & Edward Hunt Architects.

claims are properly entitled to consideration.

There is no getting away from the fact that the combined wisdom of the members of the Institute must in the end evolve the only workable policy, and it seems to us that there is no other way of obtaining this combined wisdom than by holding a series of general meetings, in which provincial members are well represented. By this method clear and unmistakable lines may be mapped out on a clean slate, and then, and then only, will be the time for committees to be formed in order to give effect to the policy of the general body.

A. W. S. CROSS.
GEORGE HUBBARD.

The A.A. Athletic Club.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The Council of the Architectural Association has very kindly given the general committee of the Athletic Club power to elect any member of the kindred professions—i.e., architecture, painting, sculpture, and surveying—as a member of the club. We should therefore be very grateful to you if you would kindly announce this in your valuable paper.

The club was founded in 1906, and, owing to its growing popularity, it was decided to purchase a ground of 6½ acres at Boreham Wood, Elstree, which is situated near the station and about half an hour

from town. The whole of this land has now been drained and levelled, and Rugby football, hockey, and cricket pitches have been arranged. We have also erected an excellent pavilion, with accommodation for changing, washing, and light refreshment.

The ground was formally opened last summer by Lady and Sir Aston Webb, and is considered to be one of the best in the county of Hertford. It has cost nearly £2,500, and I may say that donations to the ground fund are greatly needed.

The club has also rifle, swimming, and golf branches, all of which are very flourishing.

Gentlemen wishing to join the club should apply to me, care of the Architectural Association, 18, Tufton Street, Westminster.

JOHN H. SQUIRE,
Hon. Secretary A.C.

"What Might be Done with the Crystal Palace."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the issue of this Journal for April 17th (p. 391) some criticism is offered in reference to a scheme for utilising the Crystal Palace and grounds for a national folk-museum. I should be grateful for the hospitality of your columns for a brief reply; and in particular I wish to combat the doubts expressed as to whether a sufficient number of ancient houses still exist to render the scheme practicable. I believe such doubts to be wholly unfounded. It is quite certain that, notwithstanding the ruthless treatment to which our ancient houses and other buildings have been subjected in times past, there still remain a large number of sufficient merit, from their architectural features or historical associations, to warrant their permanent preserva-

tion. In the counties of Sussex and Kent (to speak for the moment of the area with which I am most familiar) there cannot be fewer than forty timber houses of the fifteenth and sixteenth centuries, any one of which, restored to its original form, would be perfectly suitable for re-erection in the Crystal Palace grounds as a part of the proposed open-air museum; and there are, besides, numerous ancient barns, water-mills, wind-mills, columbaria, well-houses, and other structures.

I hope that if the proposal to establish a national folk-museum (to include an open-air museum) be favourably received committees will be formed in various parts of the British Islands to keep a vigilant eye upon ancient buildings and monuments of all kinds, and to report upon such as are threatened with demolition or serious mutilation with a view to their purchase and removal to the open-air museum. The probability is not that there would be a dearth of suitable buildings, but that the limitations of space and of funds would preclude the saving of more than a small proportion of those that became available. The houses and other structures would not, of course, be left empty after their re-erection: they would be provided with furniture and appliances in keeping with their size, period, and locality, and thus become complete exhibits of some particular phase of culture.

The grounds of the Crystal Palace are extensive enough to enable the scheme for a national folk-museum to be carried out in addition to making beautiful gardens "with avenues, fountains, sculpture, parterres of flowers, and so on." But why should not these beautiful gardens be associated each with a beautiful house from some part or other of the British Islands? And why should not the grounds contain, besides a "garden of delight," a national playground where all our British sports and pastimes could be practised, and a national

open-air amphitheatre for the performance of old English stage plays and for folk-dances and songs?

I should be glad to send a copy of the scheme to any of your readers who may care to see it.

W. RUSKIN BUTTERFIELD,
Hon. Secretary, National Folk-Museum
Committee.
Brassey Institute, Hastings.

Architecture and Climate.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The editorial article on "The Architecture of the New Delhi," in your issue for May 1, makes one think, not only of the coming architecture of India, but also of that of England.

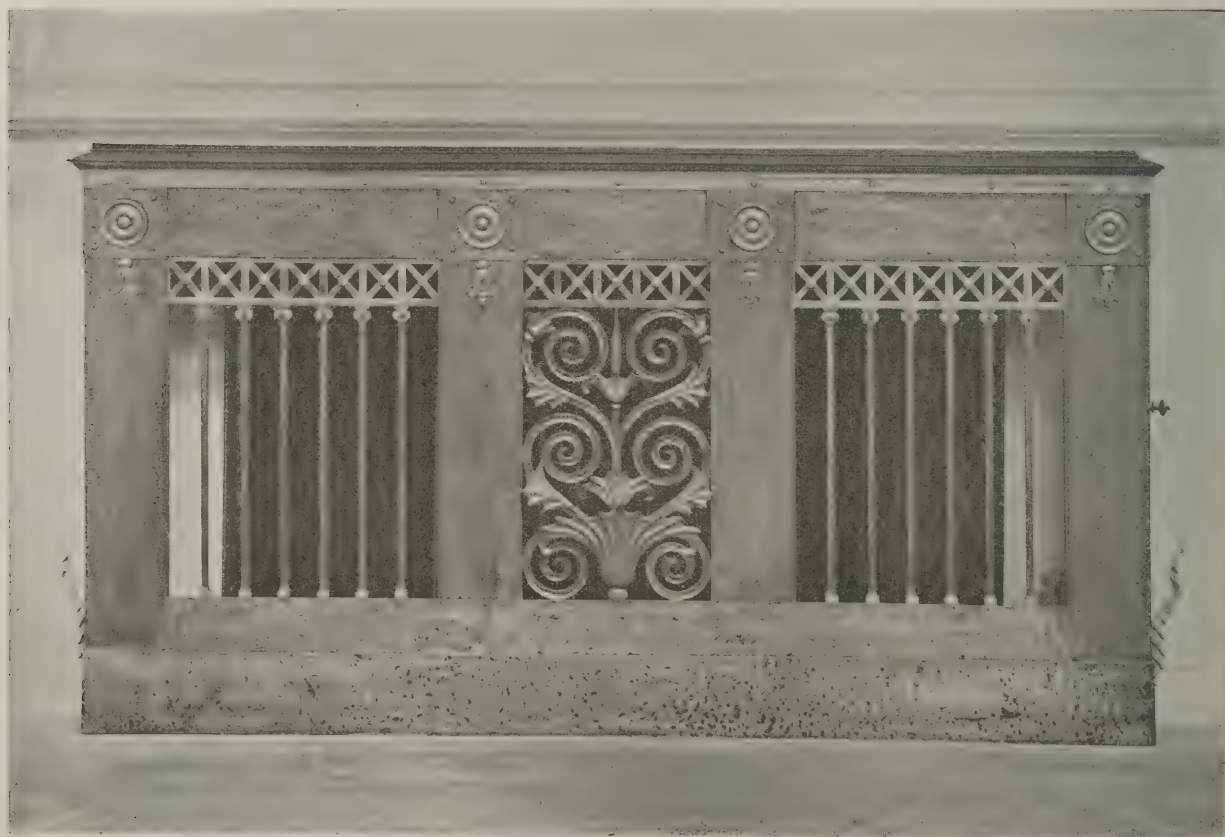
You consider—wisely, I think—that climate is an important factor in architectural design. You speak with truth of the difference between Gothic and Greek mouldings expressing the effect of the difference between northern and southern climates, and of the suitability of great cornices and open loggias or verandas for a sunny climate.

But your article seems to imply that the present-day architecture of England is especially suited to our climate, as if, when we obtained it from sunnier shores, we had modified it to suit our less fortunate conditions.

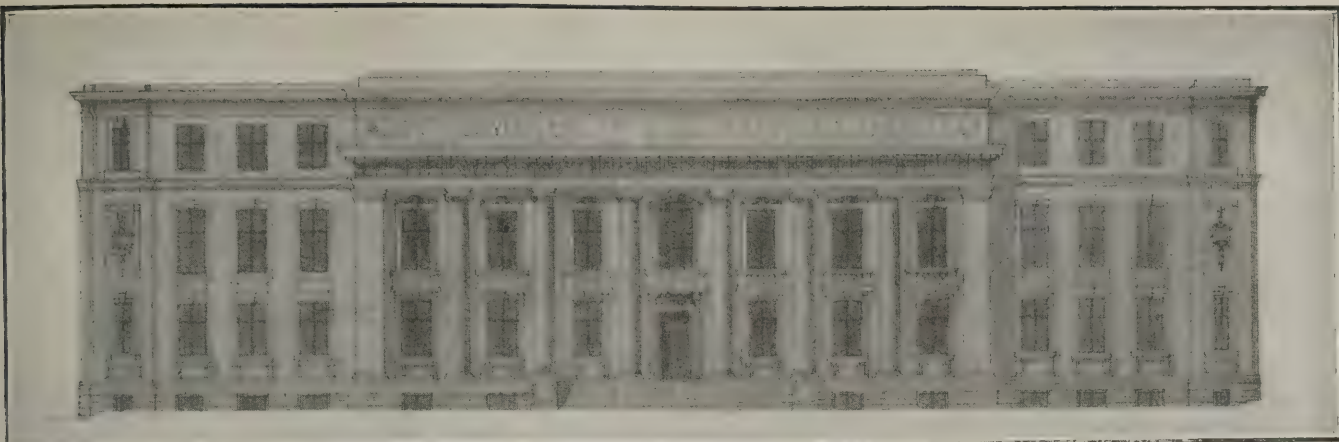
The revival of a Greek revival is considered by some to be playing an important part in modern English architecture, and, to judge by the centre plate in your issue of May 8, is receiving the guarded support of the R.I.B.A. Board of Architectural Education.

Are its devotees considering our climate as you recommend the designers of buildings for India to consider its climate?

Are they bearing in mind the suitability of the large rolls and deep hollows of



RADIATOR CASE, 93, MORTIMER STREET, W. WILLIAM AND EDWARD HUNT, ARCHITECTS.



DESIGN FOR NEW MUNICIPAL BUILDINGS, MARYLEBONE, LONDON. WILLIAM AND EDWARD HUNT, ARCHITECTS.

Gothic mouldings and of steep roofs and gables for the climate in which they were developed?

I think not, and I think it would be well if our students were encouraged to study such important factors in architectural design as the proper treatment of various materials, sound construction, sanitation, and suitability to purpose and surrounding conditions.

W. S. PURCHON.

The University, Sheffield.

Architects' Assistants and Registration.
To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—I am requested to inform you that at the annual general meeting of the Guild of Architects' Assistants, held at Prince Henry's Room, 17, Fleet Street, E.C., on May 1st, the President of the Guild, Mr. A. W. S. Cross, M.A., F.R.I.B.A., in the chair, the following resolution was proposed by Mr. S. Douglas Topley, A.R.I.B.A., seconded by Mr. J. V. Hibbert, F.S.I., and carried unanimously: "The Guild of Architects' Assistants declares itself in opposition to the published proposals for the registration of architects, and calls upon its members and friends in the promoting societies to oppose any measure lacking complete provision for the interests of the pupil and the assistant." Copies of this resolution have been sent to the Royal Institute of British Architects and the Society of Architects.

ERNEST J. DIXON, A.R.I.B.A.,
Hon. Secretary, Guild of Architects'
Assistants.

137, Church Street, Edgware Road, W.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Architects at the Office of Works.

In the House of Commons Mr. Snowden asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, whether the proposed staff of permanent architectural draughtsmen and technical assistants was intended to include all the men in the present staff classed and certificated as architectural assistants; and whether he would see that the misnomer "draughtsmen" formerly applied to these professional men but remedied, at the request of the class, to "architectural assistants" in 1907, should not be again reverted to.

Mr. Benn said: The answer to the first question is in the negative. Only those gentlemen who are eligible under the new scheme are intended to be included in the proposed new class. If there is a general

desire, the name of the proposed establishment can be altered.

Mr. Snowden asked what was the meaning of the phrase "who are eligible under the new scheme."

Mr. Benn said the scheme which was under consideration laid down certain conditions, and if those conditions were satis-

fied they would be asked if they desired to be included in the proposed new class.

Mr. Snowden asked if they had been asked already, but Mr. Benn could not say.

Mr. Snowden asked whether, in view of the undertaking made by his predecessor in this House on December 7th last that



DETAIL OF DESIGN FOR MARYLEBONE MUNICIPAL BUILDINGS.

the desires of all the class termed architectural assistants engaged in the Office of Works should be ascertained if they desired to be placed upon the established list, he was aware that no such inquiry had been made; and whether he could now state how soon this undertaking would be carried into effect.

Mr. Benn replied that so soon as the scheme now before the Treasury had been approved, the desires of all those gentlemen who were eligible for appointment to established rank as architectural or technical assistants, as the case might be, would be ascertained.

Mr. Snowden also asked whether Mr. Benn was aware that his proposal would lower the status of those professional men engaged for years in his department and termed and certificated as architectural assistants by their inclusion in the proposed staff of architectural draughtsmen and technical assistants; and whether he was aware that the professional ability and duties performed by this class were at the least equivalent to the class termed assistant architects, and therefore would he consider the justice of awarding in return equivalent conditions of service to all the class in question to that now granted to the assistant architects' class?

Mr. Benn, in reply, said: The First Commissioner is not of opinion that his proposal will involve any lowering of the status of those gentlemen, but if they object to the designation of architectural draughtsmen he is quite ready to style them architectural assistants. The honourable member is mistaken in supposing that the professional abilities and duties of these two classes are the same.

Victoria and Albert Museum.

Mr. Grant asked the President of the Board of Education whether he would now give instructions for the removal of the boarding recently erected over a considerable part of the permanent decorations of the north-western staircase in the Victoria and Albert Museum, which thereby destroyed the unity of that decoration; whether he would give instructions for the drawings, etc., which were at present hung upon the north-western staircase of the Victoria and Albert Museum to be removed to a more suitable exhibiting place in one or other of the better lighted rooms, now increasingly occupied by minor examples and purely experimental sketches; whether he would explain why the two stained-glass windows which existed on the north-western staircase at the Victoria and Albert Museum had been removed, thereby destroying the unity of the scheme of decoration; and whether he could see his way to nullify such an act of vandalism by ordering the windows to be replaced.

Mr. Joseph Pease, in a printed reply, stated: The stained-glass windows were removed primarily because they were dilapidated and required repair, which they are still undergoing. The question whether the balance of advantage really lies on the side of restoring the stained windows and removing the recently erected hoarding is largely a question of taste. I am not prepared to give instructions for the removal of the drawings now exhibited on the staircase pending a decision as to the general treatment of the staircase, on which I propose to take advice.

Mr. Grant asked if the President of the Board of Education would give instructions for making good and for the re-painting of the dilapidation of a small part of the ceiling in the lecture theatre gallery in the Victoria and Albert Museum, as well as for the walls of that gallery to be cleaned of the

accumulations of many years' dirt, so that they might be re-painted in a tint corresponding with that used when the scheme of decorating this gallery was originally carried out.

Mr. Joseph Pease stated that the making good and re-painting of the ceiling and re-colouring of the walls of the gallery had been in contemplation for some time, but the expense as well as the merits had to be considered.

Duke of York's Buildings.

Colonel Seely has informed Mr. Hoare that the alteration of the existing buildings at the Duke of York's headquarters will be completed by June 1st. There will, however, be some new buildings to be erected, of which some are already in hand and others will be commenced as soon as the designs and specifications are completed.

Walmer Castle.

Mr. Benn, replying to Mr. Snowden, who asked what arrangements had been made for the admission of the public to Walmer Castle and grounds, said the actual arrangements were being made by Lord Brassey, who had promised to grant facilities to the public for visiting the castle and grounds. The First Commissioner of Works understood that visitors would be able to see the historical rooms at all times of the year.

COMPETITIONS.

Cheshire County Council School, Port Sunlight.

We are informed that the Competitions Committee of the Liverpool Architectural Society are in correspondence with the Cheshire County Council with respect to the proposed competition for a school at Port Sunlight, and that members are requested to refrain from applying for the conditions at present, as the Society are pressing for the usual 5 per cent. commission and premium to competitors.

Padiham Municipal Offices Competition.

Members and licentiates of the Royal Institute of British Architects must not take part in the above competition, because the conditions are not in accordance with the published regulations of the Royal Institute for architectural competitions.—By order of the Council, IAN MACALISTER, Secretary, Royal Institute of British Architects.

King Edward Memorial, Ottawa.

Competitive designs are invited for a memorial to King Edward VII. to be erected at Ottawa by the Canadian Government, the competition being open to British subjects residing in any part of the world. Sketch models in plaster are required to the scale of 1½ in. to the foot. A sum of \$35,000 has been set apart for the work. Designs are to be delivered before October 1st next, and the awards will be made by a jury consisting of the Advisory Arts Council, namely, Sir Edmund Walker (Toronto), Dr. Francis J. Shepherd (Montreal), and Senator Arthur Boyer (Montreal). All communications regarding the competition should be addressed to the Secretary, Public Works Department, Ottawa, Canada.

LIST OF COMPETITIONS OPEN.

MAY 18. SUNK ARENA AND BAND-STAND, HASTINGS.—Corporation offer premiums of 15 and 10 guineas. Limit of cost, £4,500. Particulars, Town Clerk, Hastings.

MAY 22. COUNCIL SCHOOL, SOUTHEND-

ON-SEA.—Local architects are invited to submit designs for above building. Conditions and plans on application to J. W. Barrow, clerk, Education Offices, Municipal Buildings. Premiums: £25, £15, and £10.

MAY 25. PUBLIC OFFICES, LYMINGTON.—For second design, 30 guineas; third, 15 guineas. Mr. R. F. Gutteridge, F.R.I.B.A., is assessor. Apply to Town Clerk.

MAY 25. COVER DESIGN FOR A.A. JOURNAL.—The Editor of the Architectural Association Journal offers a first prize of two guineas and a second prize of one guinea for designs for the cover of the A.A. Journal. The President and Vice-Presidents will act as hon. assessors. Designs should be in Indian ink on white card, and should not be signed, but should be accompanied by a sealed envelope containing the competitor's name and address. They should be addressed to the Editor of the A.A. Journal, 18, Tufton Street, Westminster.

JUNE 1. INSTITUTE, NETHERTON, DUNFERMLINE.—Cost not to exceed £7,000. Premiums, £20, £15, and £10. Assessor, Mr. E. A. Jamieson. Apply, Secretary, Carnegie Trust, Abbot Street, Dunfermline.

JUNE 3. CRIPPLES' HOME, SHEFFIELD.—Local architects only. Assessor Mr. E. M. Gibbs, F.R.I.B.A., and Mr. F. E. P. Edwards, F.R.I.B.A.

JUNE 28. TOWN PLANNING, HALE.—Premiums of £50 and £25 are offered for a town-planning scheme. Address, Council Offices, Hale, Cheshire. [Note.—*Manchester Society of Architects have objected to the conditions. See our issue of May 8, p. 484.*]

JUNE 30. TOWN HALL, ETC., PADIHAM.—Premiums of £40 and £20 are offered for designs for town hall, baths, etc. Particulars, Mr. J. Gregson, A.M.Inst.C.E., Surveyor's Office, Padiham. [Note.—*R.I.B.A. have objected to the conditions.*]

JULY 1. NEW OFFICES FOR THE PORT OF LONDON.—Limited to the six architects selected in the preliminary competition. [See our issue of April 10, p. 370.]

AUGUST 6. FIRE STATION, CARDIFF.—Designs and estimates are invited by Cardiff Corporation. Assessor, Mr. A. Marshall Mackenzie. Particulars, Town Clerk, City Hall, Cardiff.

NO DATE. FIRE BRIGADE STATION, CARDIFF.—Cardiff Corporation invite architects to submit designs and estimates in competition for a fire brigade station proposed to be erected in Westgate Street, Cardiff. The Corporation have appointed Mr. A. Marshall Mackenzie, A.R.S.A., F.R.I.B.A., to act as assessor. Particulars on deposit of two guineas (returnable) from J. L. Wheatley, Town Clerk, City Hall, Cardiff.

DETAILS OLD AND NEW.—XL.

Doorway, Lloyds Bank, Hampstead.

Lloyds Bank, Hampstead, of which a detail of the doorway is shown on pages 510 and 511 of this issue, is built of Ham Hill stone with orange-red bricks supplied by Messrs. Thomas Lawrence and Sons, of Bracknell, Berks. The stone carving was executed by Messrs. Farmer and Brindley, of Westminster Bridge Road, S.E. The architects were Messrs. Horace Field, F.R.I.B.A., and Evelyn Simmons, Licentiate R.I.B.A. The building is a good example of modern work modelled on Georgian lines, the entrance doorway being particularly pleasing.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



Photo: "Architects' and Builders' Journal."

ENTRANCE DOORWAY TO LLOYDS BANK, ROSSLYN HILL, HAMPSTEAD, LONDON, N.W. HORACE FIELD, F.R.I.B.A., AND
EVELYN SIMMONS, LICENTIATE R.I.B.A., ARCHITECTS.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, May 15th, 1912.



Photo: "Architects and Builders' Journal."

DOORWAY TO FLATS, No. 35, HARLEY STREET, LONDON, W. WILLIAM AND EDWARD HUNT, ARCHITECTS.

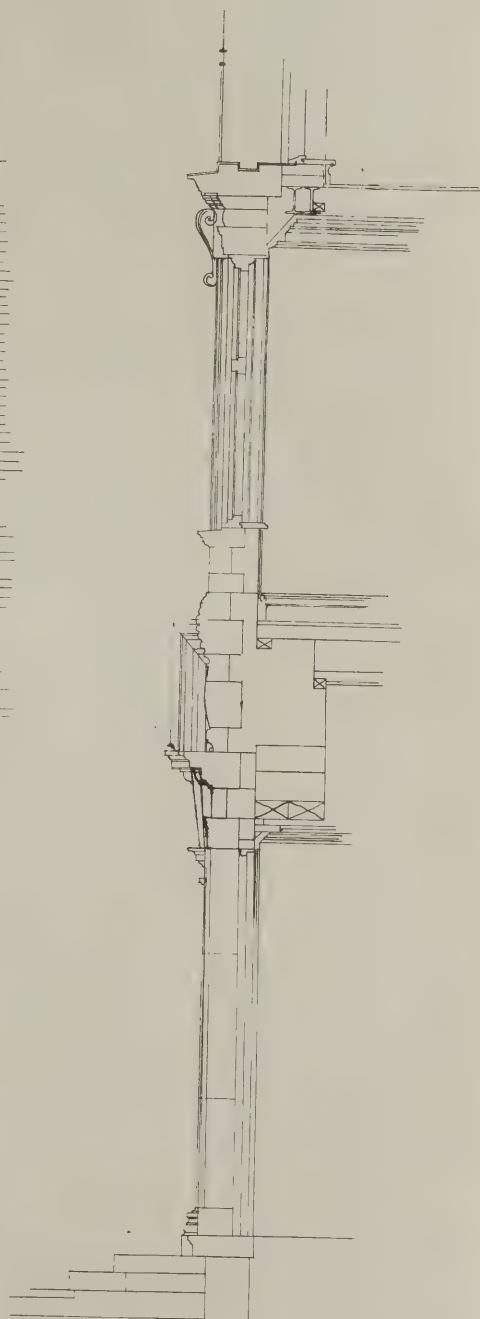
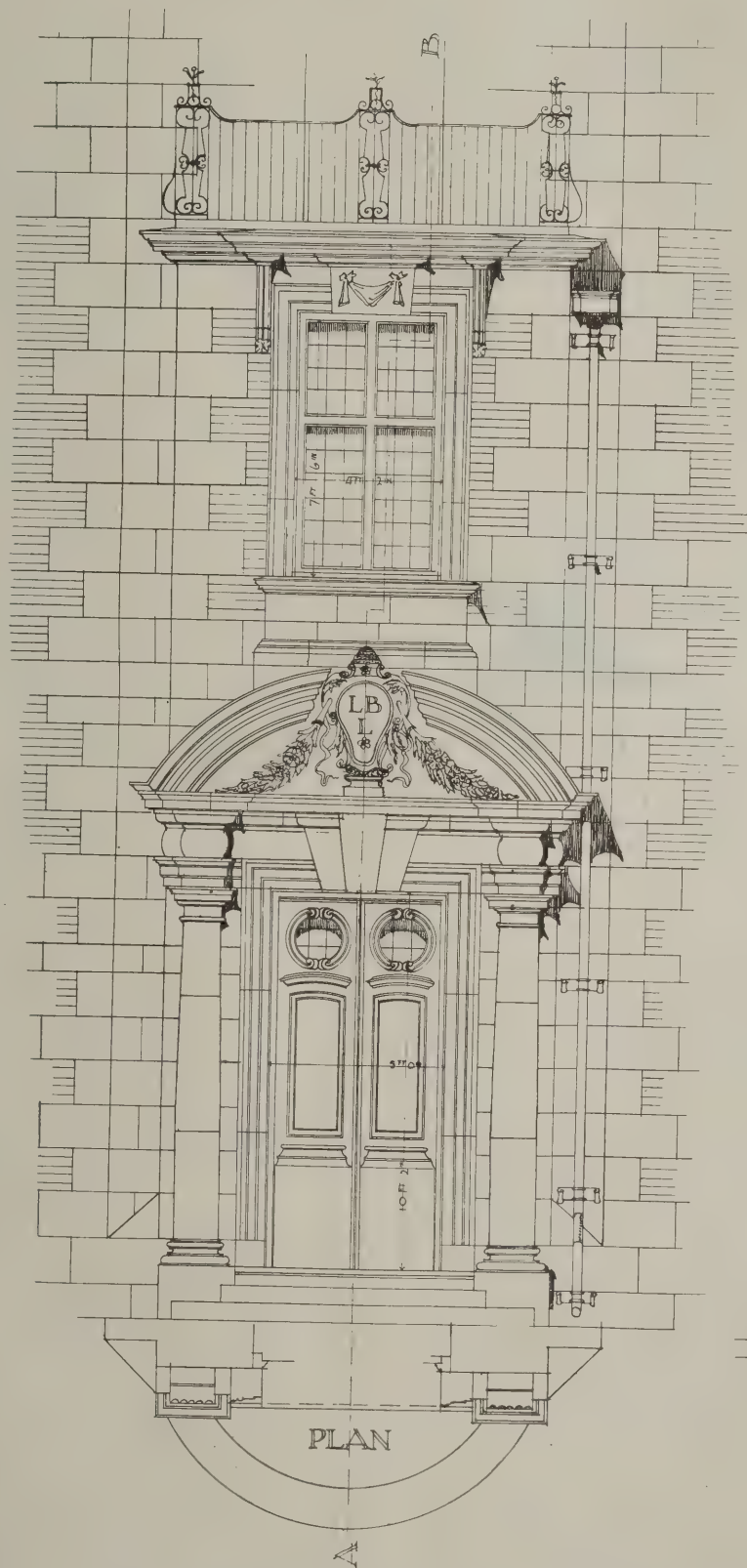


Photo: "Architects' and Builders' Journal."

DOORWAY TO FLATS, No. 35, HARLEY STREET, LONDON, W. WILLIAM AND EDWARD HUNT, ARCHITECTS.

LLOYDS BANK, HAMPSTEAD

Detail of Doorway



HORACE FIELD, P.R.I.B.A., AND EVELYN SIMMONS, LICENTIATE R.I.B.A., ARCHITECTS.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

PRIVATE HOUSE LIGHTING BY
GAS.*

BY W. H. Y. WEBBER.

Having cleared up certain preliminary points relating to the correct control of burners, Mr. Webber proceeded to deal with the ordinary problem of planning a scheme of gas lighting for a typical suburban middle-class residence, such as would command a rent of £40 a year. First, as to the entrance hall and front door lighting. The conditions necessary to be observed are that the light shall fall on the face of anyone approaching the door after dark, while coming from well overhead and behind the person answering the door. If there is a flight of outside steps and a deep porch, it might be advisable to have a light projecting from the fanlight, but with an approach on the level the disposition recommended would require a medium power inverted lamp, clear underneath, in a not too "arty" lantern, which can be, if preferred, controlled by a switch in the wall, and will also light the doorways to the lower apartments and the lower flight of stairs.

For the dining-room the light must, of course, be concentrated upon the table. Its power will depend upon the size of the apartment and its shape, but it should not be less than 60 c.p. An adjustable pendant is indicated, which, when lowered, will provide ample light for reading by the fireside. It may be stipulated here that old-fashioned gas fittings for flat-flame burners, including especially the "water-slide" pendant accepted unquestioningly by the past generation, are quite unsuitable for incandescent burners. The increase of gas-pressure has rendered the latter dangerous. It can be converted, but is rarely worth it. Modern gas fittings are lighter and steadier than the old patterns. If preferred, a pair of smaller lights can be added beside the fireplace.

For the drawing-room, scattered small units are best. These can be either bracket lights, or dropped as short stiff pendants from the ceiling. A wall-light in the garden veranda is appreciated in summer-time, nor is it impracticable to extend the lighting into a shady nook of the garden.

In the kitchen, adequate lighting is necessary. A single pendant high up, or a pair to afford cross-lighting of the kitchen, will be appreciated by the cook. The scullery and back door can be served by a single flat flame.

On the stair-landing we want a watch-light as well as adequate illumination, and accordingly a flat flame, with Breeden's pilot for night use, is indicated. The same for the bathroom and w.c.

Pendants are most convenient for bedrooms, as permitting free arrangement of the big furniture. Dressing-tables should have the light coming from overhead, as nearly as possible in the same way as day-light, and cross-lights are preferred. A bed light is a great comfort. Single units will suffice for the smaller rooms. With all lights full on—a rare occurrence—the total consumption of gas would be about 50 cubic feet per hour. Under the old conditions it would be more than double for the same number of points. The increased amount of light would be as 4 to 1.

The ordinary lighting value of the modern unit is about treble that of the common flat flame. This speaks eloquently of the heightened standard of indoor illumination which has come into vogue with

the incandescent gas light. It could not have originated otherwise, seeing that, as already remarked, the colza oil and single-wick paraffin lamp does not give more than 15 c.p.; and the contemporary domestic standard incandescent electric lamp was of 8 c.p.

Pleasant household lighting is more a question of proper disposition of the lights than of mere candle-power, although the circumstance of having to allow in all cases a head-room of 6 ft. 6 in. from the floor is of itself a preventive of the bad placing of the lights too often seen in shop windows, with the naked illuminant in the line of sight. There can be no glare when the sources are well up out of the way. Although ordinary domestic lighting of middle-class dwellings does not permit of much range of fancy in the disposition of the sources, it offers plenty of scope in a modest way for the correct and tasteful choice of fittings and shades. There is seldom use for the more powerful units. If it is a sound rule, as I hold, that the power of the units or artificial light should be governed by the scale of the enclosed space to be lighted, then it follows that in the ordinary £40 a year house nothing more powerful than a medium-size inverted incandescent gas lamp, burning about 2½ cubic feet of gas an hour, and shedding a luminous intensity of between 50 and 60 c.p. in the lower hemispherical zone, is likely to be called for in any apartment. And only then if, as in the dining-room, a brilliant downward illumination is required. This paper is, as a matter of fact, being written by the light of such a source, which is ample for a cosy room about 13 ft. square, not counting window or sideboard recesses, although the walls are covered with dark brown paper and the furniture is black oak. The ceiling and a deep frieze are white, which is a wonderful aid to light diffusion. When the white table-cloth is spread, the brilliancy is quite enough for anyone.

Personally, I am no lover of indirect lighting by diffused reflection from a white ceiling, although I have secured a very pretty effect by suspending a Japanese umbrella under a ceiling lamp. I certainly do not admire the heavy, solid copper basin reflectors I have seen in use for a similar purpose. Complete opacity in the case of such reflectors is a mistake. To me, however, the shadowless lighting resulting from this treatment of home lights is unsettling to the nerves. I find myself drifting out of such a room to one where I can see the lamp if I want to. I believe that lamps, like other good servants, should be neither in the way nor out of the way.

One other form of light to which I object is the sham candle. I know it is a selling article, but that does not redeem it in my eyes. The real wax candle is a beautiful thing, and good candle-light is hard to beat. The colza moderator lamp, too, is elegant, which is more than can be said of most petroleum lamps. I do not admire the stiff, upright incandescent gas burner, while confessing its serviceability. The inverted incandescent lamp, however, with a well-chosen shade, can claim one's admiration of its form as well as our appreciation of its solid merits, and I am satisfied to leave it at that.

New Insurance Offices in Fleet Street.

New offices for the Norwich Union Fire and Life Insurance Society, Ltd., are to be erected at Nos. 48-52, Fleet Street, E.C., from designs by Messrs. Howell and Brooks. Messrs. Patman and Fotheringham, Ltd., have secured the contract.

JOTTINGS FROM PARIS.

Bank of France to be Enlarged.

A considerable extension of the Bank of France premises will probably cause the obliteration of the Rue Radziwill; but, in compensation, the Rue de Valois will be widened and lengthened.

Law as to Street Improvements.

The new enthusiasm for town-planning in Paris has secured a modification of the law of 1852 relating to street improvements. The new law gives full power to the administration to acquire and demolish any building which, either by its size or its appearance, interferes with the perspective or the æsthetic amenities of a street.

Official Changes.

M. Recoura has been appointed to the Bibliothèque Nationale in succession to M. Pascal, who has been appointed Inspector of *bâtiments civils*. M. Falcou, Inspector-General of Beaux-Arts of the City of Paris, has been appointed Director of the service of Beaux-Arts of the city.

Accidents to Workmen: Third-Party Responsibility.

A Parliamentary Commission, charged with investigating the desirability of modifying the law of 1898 with regard to accidents to workpeople, has decided that where the responsibility for accident appears to rest with a third party—that is to say, some person other than the employer or chief contractor—an action against such third party may be jointly brought by the employer and the injured person. Some such modification of the British law seems to be necessary in view of recent decisions, in one of which the chief contractor was mulcted in damages for an accident caused by a workman employed by a sub-contractor, in whose selection the principal contractor had no voice and over whose acts he had no control—a very curious anomaly of the law, which in this respect would seem to require immediate amendment. The same French Committee has decided that the compensation for persons under the age of twenty-one shall be based on the average wage of adult workmen in the same trade.

Increased Cost of Plasterwork.

The Chambre Syndicale des Fabricants de Plâtre have issued a circular to the effect that, owing to the continuance of the advanced prices of materials, the increased expenses of insurance and of transport, and other augmentations of outlay, they are obliged to make a corresponding increase in their charges for plasterwork, the extra charge being 1 franc per metre for contracts entered upon after December 31st, 1912; but, in order that existing contracts may not be unduly disturbed, the increase during the period between May 1st and December 31st, 1912, will be only half a franc per metre.

Cheap Dwellings Competition.

The Paris Municipal Council having voted 200,000,000 francs for the erection of cheap dwellings, the city authorities are arranging two architectural competitions referring respectively to (1) the Avenue Emile Zola, Rue Nouvelle, and Rue de Javel; and (2) Rues Henri-Becque and Brillat-Savarin. The former scheme requires five types of dwellings, with rents ranging from 200 to 550 francs; in the latter the rent is not to exceed 275 francs. The author of the first-premiated design in each case will be entrusted with the execution of the work, or will receive a premium, in the first competition, of 15,000 francs, and of 10,000 francs in the other. The further premiums are as follows:—First competition—2, 8,000 francs; 3, 7,000

* Extracts from a paper read at a meeting of the Illuminating Engineering Society, April 16th.

francs; 4, 6,000 francs; 5, 4,000 francs. Second competition—2, 6,000 francs; 3, 5,000 francs; 4, 4,000 francs; 5, 3,000 francs. The premiums are liberal enough to ensure keen competition, and the resultant designs will be awaited with much interest, as it is just possible that the French architects may show us a more excellent way of housing the working classes.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Annual Report of the Council.

The R.I.B.A. report for the official year 1911-12 was submitted to the annual general meeting on Monday, May 6th. A few of the more important points in it are here given.

As we announced some time ago, it has been decided to award the Royal medal to Mr. Basil Champneys, F.S.A., in recognition of the distinguished merit of his executed work in architecture. His Majesty the King has graciously signified his approval of the award, and the medal will be presented to Mr. Champneys at the general meeting on June 24th.

The present subscribing membership of the Royal Institute comprises 859 Fellows, 1,581 Associates, and 56 Hon. Associates; total 2,496, as against 2,426 last year. During the official year since the last annual general meeting 13 Fellows have been elected, 108 Associates, and 2 Honorary Associates. The Council have decided to consider the situation which arises from these figures.

The period for the election of Licentiates having been extended to the end of June, 1912, applications have come in freely during the whole year, and at the present moment a total of 1,834 Licentiates have been elected, and many other applications are under consideration.

Since the publication of the last annual report, the Council have had the pleasure of admitting the Northamptonshire Association of Architects into alliance with the Royal Institute.

In the last annual report the Council outlined the steps that had been taken to secure united action by the Royal Institute and the Society of Architects in advancing the policy of registration. Legal and constitutional difficulties made it necessary to lay before the members a proposal to obtain the Privy Council's sanction for a Supplemental Charter and By-Laws conferring the necessary powers on the Royal Institute. The Council's proposals for this purpose were laid before a special general meeting on January 8th, 1912, and an amendment was carried referring them back to the Council for further consideration. The Council at once appointed a strong and representative Registration Committee to consider and report upon the question, and this Committee is now actively at work under the chairmanship of Mr. John Slater.

The Board of Professional Defence have given attention to several recent judicial decisions which have appeared to enlarge the legal responsibilities of architects, and the possibility of safeguarding the profession against hitherto unforeseen dangers is being carefully considered.

The Council are now considering the advisability of drawing up and publishing a Code of Professional Ethics for the guidance of members.

The Council have been engaged for some time upon the revision of the Schedule of Charges. The Councils of the Allied Societies in the United Kingdom have been

consulted in the matter, and it is hoped that the draft will be ready for submission to the general body at an early date.

During the past year the Town Planning Committee has been in communication with the Allied Societies with the object of bringing architectural opinion to bear on the town planning schemes that are being prepared throughout the country. It has already prepared and published a pamphlet for the guidance of promoters of such schemes.

The Henry Jarvis Bequest is now in the hands of the residuary trustees, and the Council have advised them, under the terms of the will, to apply the available income to the foundation of Jarvis Studentships at the New School at Rome. If the Council's proposals are accepted there will be an annual examination for the studentship, which will be open to all Students and Associates of the Royal Institute of British Architects under the age of 30 years, and one studentship will be awarded every year, of an annual value of about £180 and tenable for two years.

During the presidency of Sir Ernest George the Council gave much consideration to the possibility of founding a British School of Architecture at Rome. A Special Committee was formed to consider the project, and had entered into negotiations with the authorities of the existing British School at Rome. The Council therefore welcomed the intervention of the Commissioners of the Exhibition of 1851, who came forward at a critical moment and, with the assistance of the Royal Institute, the Royal Academy, the Royal Society of Sculptors, and the British School at Rome, founded and endowed a new and enlarged School of Painting, Architecture, Sculpture, and Archæology, which will soon begin its work. The Royal Institute of British Architects is represented on the Council of the new school by Mr. Reginald Blomfield and Mr. John W. Simpson. At the request of the Commissioners the Council have prepared a scheme for the examination of the candidates for the Architectural Scholarship which will be awarded every year by the Commissioners, and it is intended that the holders of the proposed Jarvis Studentship should also be in residence at the new school for a period of two years each.

The Joint Committee on Reinforced Concrete has compiled and published, with the sanction of the Council, a Second Report on Reinforced Concrete. It has also considered the London County Council's draft regulations for Reinforced Concrete Construction, and has reported upon them to the Council, who have submitted various criticisms and suggestions to the Local Government Board, whose sanction is required for these Regulations.

The Practice Standing Committee report, *inter alia*, that the sub-committee which had been engaged on the question of revising the Schedule of Charges, and had very carefully dealt with the suggestions made in reply to the circular sent out by the Council to all members of the Institute, had presented a report. The proposed new schedule drawn up by them, after being carefully considered by the committee, was forwarded to the Council with an urgent recommendation for its adoption at as early a date as possible. The importance of removing some of the admitted deficiencies of the existing schedule is emphasised by the fact that, of the large number of difficulties arising in practice which have been brought before the committee, at least one-third have dealt with questions of professional charges.

As an outcome of many difficulties experienced by members, arising out of the use of the R.I.B.A. Conditions of Contract, of recent legal decisions affecting the liability of architects under these conditions, and of certain suggestions made by Messrs. Edwin T. Hall and Max Clarke, the Council, towards the end of last session, referred to the committee the question of the advisability of amending the existing Conditions of Contract and especially the clauses dealing with P.C. amounts and provisional sums. The committee appointed a sub-committee to deal with the matter. During the current session a very large number of additional difficulties arising out of the existing conditions have been brought before the committee, and these have in most cases been referred to the sub-committee, the scope of whose reference has accordingly been considerably extended. Arising out of these questions the committee, on the suggestion of the sub-committee, have recommended to the Council the desirability of obtaining a legal opinion on the relative duration of architects' and contractors' liability under the Statute of Limitations. This has only just been received, and is now being considered by the sub-committee. The sub-committee have presented an interim report, and it is hoped that their complete report may be presented by the end of the Session.

It having been brought to the knowledge of the committee that the London Master Builders' Association is endeavouring to draw up a form of agreement between contractors and sub-contractors, a special meeting of the Committee was held at which a deputation from the Association was invited to be present. The chairman, secretary, and several members of council of that body, accordingly attended. They explained the difficulties at present existing in regard to the subject and the direction in which they were trying to overcome them. A general discussion followed, in which a useful interchange of views took place.

The Science Standing Committee report that they have now finally approved the suggestions of the District Surveyors' Association governing the deposit of drawings and calculations with District Surveyors in connection with skeleton frame buildings. These suggested regulations have been published by the District Surveyors' Association. The committee report also their proceedings with regard to research on building materials, mortar tests, the use of English timber, and other matters.

SHEFFIELD SOCIETY OF ARCHITECTS.

The annual meeting of the Sheffield Society of Architects and Surveyors was held at the University recently, Mr. J. B. Mitchell-Withers presiding.

The Hon. Secretary, Mr. James R. Wigfull, presented the twenty-fifth annual report. Referring to Sheffield's new building by-laws, Mr. Wigfull said there was a want of elasticity in their provisions, while too great a desire to conserve the old methods of building was evinced, and too little encouragement given to more modern methods and materials. Referring to the competition for plans for the Sheffield King Edward Memorial Cripples' Home, he said that the conditions for the competition had been issued, and the Council hoped that the response would be such that the local authorities would be encouraged to follow this example and again place some of the designing of public buildings of the city in the hands of architects in private prac-

NORTHERN ARCHITECTURAL
ASSOCIATION.

tice. Such a course would promote a spirit of healthy rivalry, from which the city would derive benefit. The Council had had under consideration, continued Mr. Wigfull, various proposals with regard to the width of roads, especially with a view to their modification in circumstances where they are not main thoroughfares and where only a few houses are served by them. A suggestion by Mr. Sandford that on hilly sites, where terrace roads are formed, these should be of half the usual width and have houses on one side only, met with general approval; but it was felt that this proposal dealt only with part of the problem so far as Sheffield was concerned and that in such circumstances as those indicated above a general reduction in the width of road was desirable.

It was reported that the past year had seen the credit balance of £60 reduced to £38 and in accounting for this Mr. Wigfull said it was not so bad as it appeared to be, as the Society had paid during the year two contributions of £25 (for two years) to the Sheffield University.

The election of officers for the ensuing year resulted as follows: President, Mr. J. B. Mitchell-Withers (re-elected); Vice-President, Mr. A. F. Watson (re-elected); Hon. Treasurer, Mr. R. W. Fowler; Hon. Secretary, Mr. J. R. Wigfull (re-elected); Council, Messrs. W. G. Buck, F. E. P. Edwards, C. B. Flockton, J. R. Hall, C. F. Innocent, H. L. Paterson, H. I. Potter, E. Winder, and F. H. Wrench.

A selection from the prize drawings of the R.I.B.A., 1912, was on exhibition.

TYNE AND BLYTH DISTRICT
BUILDING TRADES FEDERATION.

The annual meeting of the Executive Council of the Tyne and Blyth District Building Trades Federation was held at the County Hotel, Newcastle-on-Tyne, on April 29th.

After the usual routine business had been settled, Councillor J. T. Armstrong was re-elected president, Mr. J. Simpson (Blyth) vice-president, and Mr. William Brown (South Shields) honorary auditor, and the usual trade committees were appointed.

The annual report having been presented and adopted, the question of the annual subscription was discussed and determined.

A report upon the last meeting of the Plasterers' Trade Committee was presented, having particular reference to a complaint against the employment of those other than plasterers to do certain work which the plasterers claimed as belonging to their trade, namely fixing and filling in plaster reverse moulds for the production of cast *in situ* cement work, and the necessary cleaning off of same. The following resolution had been passed at that meeting: "That this meeting considers the work done *in situ* of the moulded cement cornice or coping should be carried out by plasterers, and recommends [the employer concerned] to carry out his work accordingly. It is understood that in the absence of bricklayers this meeting cannot pre-judge generally any question of demarcation of work which that trade may have in common with the plasterers."

A letter was read from the Newcastle Association asking that as the local committee had been unable to settle a dispute, the Conciliation Board be called together to consider the reference which dealt with the notice and counter-notice in connection with the proposed alteration to the Newcastle stonemasons' working rules. It was decided to call the Board together at a given date.

The report of the Council for the fifty-third session shows a decrease of ten—223 against the 233 of last year—in the total membership, and this is assumed to be a consequence of the continued depression in the building industry. The falling off is chiefly in the class of Associates—88 in 1911 as against 95 in 1910—and this is accounted for by the numbers who have left the country or have relinquished the profession. During the year three venerable and distinguished members of the Association died—namely, Mr. J. P. Pritchett, Mr. G. G. Hoskins, and Mr. W. Glover. The first-named died at the age of 81, the second was 74, and the third 82. Mr. Glover was a generous benefactor to the Association, having given £1,000 towards the purchase of permanent premises; the interest on £1,000 for the foundation of the Glover travelling studentship, etc.; £25 and many books to the library fund; and many pictures and drawings, etc. During the year the rules were revised, and were sanctioned and approved in January of the present year by the Royal Institute. At the request of the Corporation of Newcastle-on-Tyne, the Association appointed two members to attend meetings of the sub-committee of the Corporation formed for the purposes of Part II. of the Housing and Town Planning Act. The Council of the Association, acting on the advice of the Practice Committee, have asked the Royal Institute to consider the following suggestions with respect to the appointments of clerks of works: (1) That such appointments in future be made by the architect; (2) that power of dismissal should rest with the architect; (3) that the salary be paid through the architect. Further suggestions have also been made to the R.I.B.A. with reference to the proposed amendment of the schedule of professional charges.

NEW BOOKS.

The Insurance Act and Yourself.

In order to arrive at a fair understanding of even the shortest and simplest Act of Parliament the layman requires the assistance of a legally qualified interpreter, and the necessity for expert guidance is greatly magnified in the case of a complicated measure like the Insurance Act. In "The Insurance Act and Yourself" (London: Thomas Murby and Co., 6, Bouverie Street, E.C.; price 6d.) Mr. Horace B. Samuel, M.A., Barrister-at-Law, provides an admirably popular exposition of the Act, not only making its provisions clear, but discussing them in all their bearings in such plain language as to render the book quite interesting to read, as well as being explicatory and instructive.

Columns and Struts.

Mr. William Alexander's book on the theory and practical design of columns and struts is distinguished beyond most technical manuals by the extent to which original and independent investigation is included. Euler's formula leads to the conclusion that a strut of uniform section throughout passes into a state of indifferent equilibrium when it commences to bend under an axial load, and therefore that no relation can be determined between the load and the amount of deflection. This conclusion, erroneous through the rejection of certain factors, has formed, says Mr. Alexander, a barrier to progress in the investigation of column and strut phenomena. Accord-

ingly he has made his own investigations on different lines. He demonstrates the true relations between load and deflection and bases the resulting equations on the maximum permissible amount of deflection, that limiting amount being, in turn, determined from the maximum permissible fibre stress intensity. Further, the nature of the shearing or web stresses is shown and their amounts are determined directly from the equations to the curves of deflection and not, as is usual, from an imaginary equivalent transverse load. He shows that the form of the cross-section has a great effect on the strength of a strut, and the efficiency of common sections is discussed in detail. The general effect of tapering in columns and many details of design are considered, and there is a detailed investigation of the struts which were the first to fail in the Quebec Bridge disaster. In the last chapter a large number of problems in design are worked out in illustration of the correct application of the principal equations required for practical designing.

Concerning a passage in the report of the Royal Commission on the Quebec Bridge failure the author makes, as it seems to us, a rather inept observation. The report says:—"The professional knowledge of the present day concerning the action of steel columns under load is not sufficient to enable engineers to economically design such structures as the Quebec Bridge. A bridge that will unquestionably be safe can be built, but in the present state of professional knowledge a considerably larger amount of material would have to be used than might be required if our knowledge were more exact." Upon this Mr. Alexander comments:—"That statement appears to be somewhat illogical, as, if it is not possible to determine the correct amount of metal required in a strut, how could it be known that the amount used was greater than necessary? On the other hand, if it could be known that the amount used was greater than necessary, why put in so much?" Question for question, why should Mr. Alexander waste space in chopping logic? There is no real dilemma. What will break is roughly known and what will not break is roughly known, and you naturally use what you know will not break, although you are well aware that you are probably exceeding the exact amount necessary, that amount being unascertainable. Surely there are cases in which the designer may know whether or not he has a margin, without being able to determine its exact measurement.

Columns and Struts. Theory and Practical Design. With examples worked out. By Wm. Alexander, M.Inst.C.E. 101 illustrations. Pp. xii. + 268, 8½ in. by 6 in., price 10s. 6d. net. London: E. and F. N. Spon, Ltd., 57, Haymarket.

The West Country.

"The Homeland Reference Books," cheap, compact, well illustrated, and compiled with great care, deserve the remarkable success that they have undoubtedly achieved. The volume dealing with "The West Country—Somerset, Dorset, Devon, and Cornwall"—of which we have received the 1912 edition, is one of the best of the series. All the interests of the West Country—historical, scenic, architectural, practical—are clearly and accurately represented, and all necessary guidance in the practical details of travelling, hotel accommodation, places of worship, amusements, and other matters is conspicuously set forth. Several maps are included.

The West Country: Somerset, Dorset, Devon, and Cornwall. Pp. 254, 7½ in. by 5 in., price 1s. net. London: The Homeland Association, Ltd., 15, Bedford Street, Strand.

NEWS ITEMS.

Mr. Norman Shaw.

Mr. R. Norman Shaw, R.A., celebrated his 81st birthday on May 7th.

Windsor Castle Architect and Surveyor.

Mr. R. B. Robertson has been appointed architect and surveyor at Windsor Castle, in the place of Mr. A. Y. Nutt, M.V.O., who has retired under the age limit.

Lectures on Concrete Engineering at Cambridge.

The lectures on practical and theoretical concrete engineering have now been resumed at the Cambridge University Engineering Laboratories, the lecturer being Mr. A. C. Davis, of the Saxon Cement Co., Cambridge.

Notice of Removal.

The London showrooms of Messrs. J. and R. Corker, Ltd., of Rotherham, have been transferred from Saracen's Head Buildings, Snow Hill, to Atlantic House, Holborn Viaduct, and 49, Farringdon Street, E.C. (Mr. W. B. Clarke, London director.)

Sheffield Garden Suburb.

The Sheffield City Council have before them a scheme for laying out a garden suburb at a cost of £60,000. The Council acquired much of the land in the Rivelin Valley and made a road through it. The land fronting the road is now to be laid out for building under the direction of the Council.

Town Planning Act Amendment Bill.

A Bill to amend the Housing, Town Planning, etc., Act, 1909, presented by Mr. Cassel, and backed by Viscount Wolmer, Mr. Duke, and Mr. Worthington Evans, has been printed. It seeks to substitute appeal to a court of quarter sessions for appeal to the Local Government Board under sections 15, 17, and 18 of the Town Planning Act.

The New Building of the Royal Society of Medicine.

The new building of the Royal Society of Medicine at the corner of Henrietta Street and Wimpole Street, W., is to be opened by the King and Queen on May 21st. The architects are Messrs. John Belcher, R.A., and J. J. Joass, F.R.I.B.A., and the builders Messrs. G. Godson and Sons, of London, W. "Ceresit," supplied by the British Ceresit Waterproofing Company, Ltd., of 68, Victoria Street, S.W., has been used for waterproofing the structure.

The Bacon Memorial at Gray's Inn.

The statue of Francis Bacon which is to be erected in South Square, Gray's Inn, will be unveiled on June 27th by Mr. Balfour. The statue is the work of Mr. F. W. Pomeroy. The simple inscription on the front of the pedestal will be: "Francis Bacon—1560/1-1626," but on another side will be set forth the dates which mark his connection with the Inn—"Admitted, 1576, called to the Bar 1582, Reader 1588, Dean of Chapel 1589, Treasurer 1608-1617." Bacon was the last Treasurer of the Inn who held office for more than one year in succession. The date selected for the unveiling of the memorial, June 27th, is that upon which he was admitted to the

Inn and called to the Bar. Upon another side of the pedestal will be a list of Bacon's principal works, "The Essays, Instauratio Magna et Novum Organum; History of the Reign of Henry VII., De Dignitate et Augmentis Scientiarum." The fourth side will recite the public offices held by Bacon: "M.P. for Middlesex 1593, Solicitor-General 1607, Attorney-General 1613, Lord Keeper 1617, Lord Chancellor 1618."

To R.I.B.A. Associates.

In view of the recent discussion at the business general meeting of the R.I.B.A. on March 4th on the question of the representation of Associates on the Council, it has been suggested that it would be of great assistance to the Council and to members if accurate information could be obtained as to the number of Associates who are qualified for the Fellowship, but who have remained in the Associate class. The Council will therefore be glad if all those Associates who have reached the age of thirty years, and have been in practice for seven years as principals, will kindly send their names to the Secretary.

The New A.R.A.

Mr. William Llewellyn was elected an Associate of the Royal Academy last week. Mr. Llewellyn was born in 1863. He entered the Kensington Training School in 1881, when Sir Edward Poynter was Principal, and afterwards worked in Paris under Ferdinand Cormon and also in one of Julien's ateliers visited by Lefebre and Ferrier. He has been a regular exhibitor at the Academy since 1886. Mr. Llewellyn has also exhibited at the New Gallery. He is a member of the Royal Society of Portrait Painters and of the Society of Twenty-five Painters.

This year the Academy exhibition will remain open every Thursday evening until 10 p.m. at the usual charge of 1s. for admission.

Structural Stability of the Leaning Tower of Pisa.

"The Leaning Tower of Pisa is not, we think, in immediate danger; nevertheless hurry up with your preventive measures if you wish to avert another such catastrophe as that of St. Mark's Campanile." Such, in substance, is the conclusion which the Royal Commission experts have just presented to the Italian Government. The worst menace to the safety of the famous structure is due to the presence of strong currents of fresh water athwart the base of the tower. These currents undermining the foundations must have already created notable hollows in the subsoil, and, what is more serious, no effectual means have hitherto been devised for checking them.

OBITUARY.

The Late Mr. Harston.

Mr. Arthur Harston, of Hackney, N.E., architect and surveyor, who died on April 6th, aged seventy-one, left estate which has been proved at £48,986 gross.

Mr. Herbert Holloway.

The death is announced of Mr. Herbert Holloway, contractor, of Wolverhampton. Mr. Holloway, who was 60 years of age, from a small beginning nearly forty years ago built up a very large business and carried out extensive tramway, water, and sewerage schemes.

VENTILATION BY OZONAIR.

On Friday last a large party of technical experts and others were conducted, under the guidance of representatives of Messrs. Ozonair, Ltd., over a section of the Central London Railway for the purpose of inspecting the Ozonair system of ventilation with which the railway has recently been equipped throughout. The installation consists of a separate and independent plant at each station, with the exception of Shepherd's Bush, which is near to the open end of the tunnel. The operation of a plant is as follows: A filter screen cleans and washes the incoming air from all dirt and smuts, at the same time absorbing all the deleterious gases, such as ammonia and sulphurous acids. The air is drawn through a filter screen by the aid of a fan, which is driven by a powerful electric motor. This screen is kept moistened by means of a continuous flow of water from a series of jets at its upper edge. A comparatively strong mixture of ozone is produced by the ozone generator, and this is conveyed by a pipe to the mixing chamber of the main ventilating fan, where it is mixed with the main current of air and thence blown down the main air-trunk to the various distributing sheet-metal ducts or conduits on the platforms. Most of the Central London Railway equipments each pass normally some 360,000 cubic feet per hour, and the generator provides an amount of ozone sufficient to preserve the proper proportion. The proportion of ozone and the volume of air supplied can be regulated from the switchboards controlling each equipment. The main ventilating fans are of the "Sirocco" pattern, being driven, in most cases, by $7\frac{1}{2}$ h.p. motors. The installation on the Central London Railway has given complete satisfaction, the purified and invigorating quality of the atmosphere throughout the entire system being at once apparent.

PROPOSED MUNICIPAL WORKS.

The Local Government Board has decided to hold, or has recently held, as the dates indicate, inquiries into proposed expenditure by public bodies as follows:—Barking Town Urban District Council, £10,000 for housing (May 14th). Sewerage, drainage, and sewage disposal—Kettering Rural District Council, £5,900 for Corby (May 16th); Sutton-in-Ashfield Urban District Council, £1,366 (May 16th); Birmingham Tame and Rea Drainage Board, £56,000 (May 17th); Widnes Borough Council, £3,000 (May 17th); Wrotham Urban District Council, £10,000 (May 17th); Droylsden Urban District Council, £1,157 (May 16th); Lichfield Rural District Council, £10,139 for Shenhall (May 15th); Ossett Borough Council, £3,453 and £1,650 (May 15th); Cannock Rural District Council, £5,200 (May 14th). Street improvements, etc.—Droylsden Urban District Council, £5,556 (May 16th); Blackpool Borough Council, £2,224 (May 15th); Leeds City Council, £24,767 (May 14th). Various—Ebbw Vale Urban District Council, £12,000 for carrying out Education Act, 1902, and £4,000 for electric lighting (May 16th); Worksop Urban District Council, £6,470 for electric lighting (May 17th); Chester City Council, £14,839 for hydro-electricity works (May 16th); Blackpool Borough Council, £10,000 for plant at electricity works (May 15th); Cudworth Urban District Council, £6,700 for gas undertaking (May 14th).

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 22nd, 1912.

Volume XXXV.

No. 905.



NEW HOUSES OF PARLIAMENT, STOCKHOLM: DETAIL OF MAIN ENTRANCE. A. JOHANSSON, ARCHITECT.



NEW HOUSES OF PARLIAMENT, STOCKHOLM: THE GRAND STAIRCASE.
A. JOHANSSON, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 22nd, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 905.

Church Architecture at the Royal Academy.



WE never remember such a large proportion of church designs as there is in the Academy Architectural Room this year. The whole of the long wall of the room is occupied with them; and as there is not really any special activity in church architecture at present, it looks rather as if the Hanging Committee

had admitted all the church drawings sent, to the exclusion of others, with the view of making a feature of church architecture in this year's exhibition.

There is so much room for new ideas in church architecture at present—they are, in fact, so much needed—that one looks at such a collection with some interest to see if it will afford anything of the kind. There is not much new suggestion; the majority of the designs follow what is still the usual type of revived mediæval building. There can be little doubt, however, that the mediæval type of church will not very long be accepted as all that can be done for a modern church; many architects go on designing such churches, as sanctioned by custom; but the question as to the suitability of the mediæval plan for modern worship is being much canvassed; and then there is the question, too, of the architectural value of revived Gothic. For everything except churches Gothic seems now to be out of date; it still clings to the church; but for how long?

Mr. Ambler's church at Potter's Bar, the first on the list, boasts of a plan, but is hung too high to make much out of it, save that it appears to be a red brick church in regulation Gothic style, with stone dressings and a short square tower at the crossing. There is nothing to object to in it, nor in Mr. Doyle's church for Mossley Hill, Liverpool (no plan), regulation Gothic, with a western tower. Mr. Gibbs's St. George's Church, Madrid, is interesting as a church on Spanish ground by an English architect; it does not take on any Spanish character, but it is good Gothic, forming a picturesque group, with well-proportioned buttresses. The interior is hung in another part of the room, and has a sexpartite vault, a form of vaulting not much patronised in revived Gothic, any more than it was in ancient Gothic. Two drawings of the same building should surely be hung together, but it is one of the vagaries of the Architectural Room that this is hardly ever done. Mr. Tapper's School Chapel for Perth, Australia, takes the orthodox form of a school chapel. In the Private Chapel at Pull Court, Tewkesbury, by Mr. Anthony Wilson, we get away from Gothic for a moment; this is no doubt a chapel in a house in Renaissance style, and looks rather like a large drawing-room, with Classic pilasters and a segmental ceiling, and a black and white marble floor laid in a very obvious kind of pattern; nothing about it symbolises a chapel except the altar at the end. The exterior of Messrs. Walsh and Nicholas's St. Matthew's Church, Northowram (Halifax),

shows the unusual arrangement, in an English church, of a tower standing separate from the church, connected with it by a roofed passage; a plan might have shown better the reason for this; it is a good building, but the tower seems to finish very abruptly with a set-off coping; it looks rather as if it wanted a spire to complete it.

Mr. Fellowes Prynne's interior view of St. Martin's, Worcester, has more character than anything we have come to yet; the piers are octagonal, with arches springing from them with no capitals intervening, piers and arches in brick alternating with stone, and a panelled wooden dado round the base of the piers; it is shown in an excellent water-colour drawing. Below this hangs a large coarsely executed drawing of part of an open work memorial screen by Messrs. Bromet and Thorman, with a quasi-Gothic tracery that does not gain in effect from having the fillets set out at different widths. This drawing could have been perfectly well seen if hung at the top of the wall space, whereas here it is unnecessarily hung close to the eye, while small drawings are hung high where they cannot be seen—another example of the want of common sense with which the contents of the Architectural Room are arranged. In the interior of St. Faith's, Nottingham, Mr. Sudbury seems to have wished to show what could be done with mere round-arch arcading and wall arches without a scrap of decorative detail, and with a quarter-pitch rafter roof. There is character, certainly, in this stern simplicity, shown in an effective drawing. Mr. Cogswell's Rood-screen at St. Andrew's, Exmouth, is one of the few really original pieces of design in the room. Gothic in feeling, but with no imitative detail, the piquantly designed uprights and brackets carry a screen divided into square and narrow panels alternately, each narrow one containing a statue. The interior of St. Andrew's, Coulsdon, by Messrs. Greenaway and Newberry, is of the solid Gothic order. In this and their other interior, St. Peter's, South Wimbledon, they show a true perception of the quality of masonry design. In both of these, again, the arches develop out of the piers without any capitals. There is a recent tendency to employ this method of treatment. Capitals in Gothic are going out of fashion, and no doubt it is difficult to find an original treatment for modern Gothic capitals.

Mr. Honan's interior of St. Philip Neri, Liverpool, a small drawing, is hung too high to see anything except that it shows that awkward arrangement of round side-arches cutting into the section of a rounded barrel vault, producing disagreeable and distorted curves, which ought always to be avoided. Another small drawing hung too high to be seen is a "design for a church" by Mr. Marvin, which appears to be a rather clever design for a church of mediæval composition, but with something like free Classic detail. A suggestion of that kind is worth consideration, and deserved to be hung where it could be seen; while on the other hand we find a space given, on the line, to a large coarsely executed drawing called "Sketch for an Abbey Church," a mere piece of late Gothic commonplace.

Mr. Carøe's Church of Stanley St. Peter, Wakefield, is shown in a large beautifully executed interior view. Here again the capital is omitted; the lowest member of the arch comes down the side of the pier as a projecting fillet; a similar fillet on the other face of the pier runs up to a cap carrying the wall-piece of the timber roof. No plan is given. The next exhibit, St. Joseph's Church, Aldershot, by Messrs. H. R. & B. A. Poulter, shows an exceedingly effective piece of planning to fit a triangular site at the junction of two roads at an acute angle. With true architectural perception, the architects have derived the character of their plan from the peculiarity of the site; developing the plan in steps, as it were; first a small chapel, then a long Lady-chapel parallel with it, running out as far as the site boundary permits; then the main church, which runs out to the extremity of the site. The elevations show a brick church based on Byzantine models. This is one of the best things in the room. Mr. Carøe's St. Boniface, St. Budeaux (Devon), is a large and effective exterior with a western tower, in which we notice again the method of stopping the tower off square at the top by a level coping. This abrupt finish seems to be a new fashion in tower design; it has rather a crude appearance. Messrs. Grove and Gill's St. Mark's, South Teddington, is a small exterior perspective of what appears to be a church with some originality of treatment, and therefore is, of course, hung so high that one can hardly make it out; the west-end tower appears to be a long-shaped octagon on plan, with the longer axis at right angles to the axis of the nave; it appears to be very effectively treated. In Messrs. Kelly and Dickie's St. Saviour's, Lewisham, we have the unusual spectacle of a Renaissance church interior with an arcade on columns, and a round-arched barrel vault accentuated by ribs dividing the bays; between these the round-headed clearstory windows cut into the vault with the distorted curve which we have already referred to in another instance. The complicated design of Mr. Wolstenholme's Congregational Church, Fairhaven, absolutely requires a plan to explain it, though that could not reconcile one to the character of the detail.

A few numbers further on we come on a view of the interior of Messrs. Poulter's church at Aldershot, put far away from the plan and elevations, with the usual carelessness in the whole arrangement of the Architectural Room. This is a very characteristic interior, with square brick piers alternating with frankly Byzantine columns. The inner face of the brick piers is continued as a wide pilaster up to the cornice, the whole covered with a semi-circular wooden barrel vault. In the case of alternating piers, principal and intermediate, in the nave arcade, there should be, to make the scheme complete, a corresponding alternation in the roof design, as there is in so many of the ancient Romanesque churches with alternating piers. Mr. Tapper's Church of the Annunciation, Old Quebec Street, is a fine solidly treated brick Gothic exterior; for once the interior view is placed next to it, but is less interesting. Mr. Matear exhibits a large and important elevation drawing of the west end of Holy Trinity Church, Southport, accompanied by a plan and a half section of the tower, which is the principal object in the elevation. This is the right sort of drawing to send to the Architectural Room, and we wish there were more such, though we confess that we cannot in this case feel very enthusiastic about the design in itself. It is loaded with a good deal of elaborate detail for which there hardly seems a sufficient motive. This is, we imagine, a new west front and tower to an already existing church. Messrs. Lofting and Cooper's St. Luke, West Hartlepool, is an exterior view of an Early English church, accompanied by a rather unusual plan, the nave being almost an exact square. The piers shown on the plan do not seem quite adequate to carry the centre tower. Mr. Burke Downing has got a good deal of character into the west end of his brick church at Mitcham, for the City of London School Mission.

Mr. Temple Moore exhibits the plan and two line-drawing perspectives of what he frankly describes as "Rejected design for the Chapel of the Community of the Resurrection, Mirfield." The plan is an interesting and very unusual one. There is a short nave expanding into a wider nave. There are two small chapels fitted obliquely into the re-entering angles of the chancel walls with the east ambulatory wall. There are other peculiar and interesting features of planning; but the promise which the plan seems to give of an interesting and effective exterior and interior architecture is hardly fulfilled by the rather heavily drawn perspective views, the effect of which seems rambling and uncertain.

Professor Beresford Pite exhibits a large perspective view, accompanied by a plan, of the interior of his Uganda cathedral, in which there is a great expenditure of tie-rods in all directions to secure an arched construction carried on columns with decorative capitals of peculiar and original design. We presume there is something like a central dome, as a squinch arch is visible on the opposite side of the central space. Any building carried out by Professor Pite will be sure to be original and striking, but we feel a certain dislike to arched construction depending on tie-rods. A building should be built, not bandaged.

Mr. Maurice B. Adams's interior view of the Chapel of All Souls', Bedford Park, is of interest, as, if we read the drawing aright, it appears to represent a modern application of the method of vaulting employed in the old Romanesque church of Tournus, a series of arched vaults at right angles to the long axis of the building, built up between transverse arches. If so, it is the only modern example we remember to have seen of this method of vaulting. The drawing is a highly finished perspective in ink line, no doubt by the architect, whose accomplishment in this respect is well known. There are a great many finely executed drawings in the collection, but no very many, we imagine, the work of the architects whose names they bear.

On the whole, one cannot say that this large exhibition of church designs contains a very great proportion of work that is of real interest. Church architecture for the most part seems still to run too much in a kind of accepted groove; indeed, there are some designs, bearing good names, too, which we passed over because there was really nothing to say about them except that they were correct Gothic, of the kind that might have been built any time since the Gothic Revival. Our own impression is that the basilica form of church is really the best for modern worship, or, at all events, that it lies between that and the Byzantine type of plan with a wide central area, and we should like to see more attempts made in either of those types. The central area covered by dome is, of course, liable to be acoustically defective; but acoustics are not everything, or even the chief thing, in church design.

The Parthian Palace of Hatra.

THE subject of the lecture given at the meeting of the Society for the Promotion of Roman Studies on May 14th, hardly came properly within the scope of the Society's programme, since it dealt with the remains of the Parthian Palace at Hatra, and the Parthians were exactly the people who refused to be conquered by the Romans or incorporated under their empire. However, no one could complain, for the lecturer was Miss Gertrude Bell; and to hear Miss Bell lecture on an ancient building, and to see her photographs of it, is to be sure of an intellectual treat. The palace at Hatra is a most curious example of the strange things that happened in what may be called the debatable lands of architecture. The palace consisted, in plan, of two main apartments, vaulted in stone (portions of the vaults still remaining), and with a narrow compartment on each side, the vaults of which

served as abutments to the larger central vault. Among the curious details illustrated in the photographs were the capitals of the pilasters, decorated by a row, or in some cases two rows, of stiff and clumsily modelled leaves ranged side by side and drooping over at the top, looking like an attempt to imitate the Classic acanthus. A still more peculiar detail was the decoration of some of the pilasters with small heads rudely carved in relief, generally two together near the top of the pilaster, standing out from the stonework without any moulding or margin round them, but as if stuck on to the wall: a kind of detail of which there seems to be no other example. Some of the vaults showed the system of heavy stone arches supporting a lighter filling between them—a form of roofing found in various old churches in Syria, and also in the late Roman building called the *Thermæ of Diana at Nismes*—a method probably employed in the first instance, as was suggested by a speaker in the discussion, to economise centering, the separate arches only being built on centering, and then forming the support to the intermediate portions of the vault. Miss Bell lectured, as usual, without any notes, carrying on her description and analysis of the building with perfect clearness and fluency, and showing a complete knowledge of architectural construction.

The Problem of By-law Relaxation.

LAST Thursday a standing committee of the House of Commons occupied the whole of the day's sitting in discussing a single clause of a Bill (promoted by Sir A. Griffith-Boscawen, and other Unionist members) to provide for the better application and enforcement of the Housing of the Working Classes Acts, and to amend the Small Dwellings Acquisition Act, 1899. The clause that took up so much time provided for the relaxation of the existing by-laws, and is the outcome of an agitation that has been gathering strength for many years: the argument being that over-stringency in by-laws, or their inelasticity of application, renders them actually inimical to the object they are intended to serve. That is to say, they often prevent the building of much-needed dwellings, especially in rural districts, by insisting on requirements that would raise the cost to a prohibitive figure and are at the same time obviously in excess of particular needs. The difficulty is that by-laws which are in certain circumstances necessary and appropriate enough cannot be relaxed where the conditions obviously render their enforcement unnecessary and even ridiculous. The clause in question provided for relaxation of the by-laws by a special department of the Local Government Board upon due cause being shown. A Government amendment to the clause would make it exclude all applications for relaxation except those promoted by the local authority. Sir R. Baker objected to this restriction, and moved an amendment to include schemes promoted by private individuals, co-operative societies, or public-utility associations. Mr. Burns opposed this amendment on the ground that "it would involve risks that housing reformers should not take"—the chief of such risks being, apparently, that of lowering the general standard by encouraging minimum observance. Mr. Burns bluntly said that in this matter private persons were not to be trusted, and that he had known co-operative and public-utility societies with whom charity covered a multitude of sins. "While anxious to give exemptions in proved cases, he declined to remove the protection the poorest now have under the existing by-laws of the good local authorities who were standing up against the jerry builder." At a later stage of the discussion, however, he said that he was prepared to consider definite schemes submitted by public-utility associations or individuals, and to give greater elasticity and wider exemptions than now prevailed, though he must decline to accept the amendment, upon which discussion had not been concluded when the committee adjourned

till June 6th. Apparently Mr. Burns is by no means opposed to the principle of relaxation, but probably he foresees a very formidable practical consequence of admitting all sorts and conditions of claimants for exemption. It would impose an intolerable burden on the Local Government Board, because everybody who desires to build meanly would try his luck as to exemption, and the Board would have no real means of determining whether or not any such demand was reasonable. The problem, indeed, is not an easy one to solve, since it must always be a delicate task to determine when a law or a by-law of beneficial intent can be beneficially relaxed; especially when, as in the present case, it is so much easier to generalise than to discriminate. Nevertheless, the Government is committed to the delicate task of devising some efficient means of distinguishing the cases to which certain prescriptive by-laws are and are not strictly applicable. Until this peculiarly sensitive machinery is set up, we shall, as Sir A. Griffith-Boscawen gracefully expressed it, "never get a move on in this matter of housing."

Pictures by Josef Israels.

AT the French Gallery in Pall Mall East there is on view a memorial exhibition of works by the late eminent Dutch painter, Josef Israels, who died last year at the age of eighty-four. Israels was no doubt in his way a great painter, from his broad style, his mastery of colour and texture, and the simple and direct manner in which he went to the heart of his subject, omitting everything except what was essential to it; one could fancy him echoing Millet's dictum, that every detail which does not assist the main subject of a picture is a positive injury to it. But he is an artist perhaps better appreciated when one sees one of his best works separately than when one studies a number of them collectively. His preference for melancholy and even sordid aspects of peasant life, and the almost entire absence of bright colour (except in some of his small outdoor scenes with children playing), renders a whole roomful of his pictures rather depressing to the spirits; we seem to see only the unhappy side of life portrayed in them. But he found in this class of subject the real outlet to his genius, and painted what he felt. One or two obviously early works without any of these melancholy characteristics are nevertheless of little value, except to show in how academical a manner he painted in the days before he had found where his real power lay.

Sta. Sophia, Constantinople.

THE news that Justinian's great church at Constantinople is in a dangerous condition is enough to send a thrill of anxiety through the whole architectural world—we might almost say, the whole educated world, lay and professional. Such seems to be the fact, however. We have even heard it authoritatively declared that without extensive reparation the great dome cannot be considered to have a more than twenty years' lease of life from the present moment. It appears that some two or three years ago a well-known French architect, M. Prost, assisted by an Italian architect, made an examination and report on the building by request of the Turkish Government, but both were so little pleased with the treatment their report received that they withdrew it and quitted the field. M. Prost, we remember, either last year or the year before, exhibited at the Salon a complete set of measured drawings of the building, showing, among other things, the serious cracks in at least one of the main piers supporting the dome. The question is, What is to be done? Sta. Sophia is such a wonderful building, so absolutely unique as an example of dome construction on a great scale, that its preservation is a matter of interest for the whole civilised world; and it is in very bad hands at present. It is perfectly certain that Turkey cannot

find much money to spend on the building, nor can the Turkish authorities, even if they had the money, be trusted to do the best for the building; there is evidently great reluctance to allow the unbeliever to have anything to do with it; and in that case it would probably be insecurely patched up by some Turkish architect whose engineering skill could not be depended on. If money is the principal obstacle, the Governments of the leading countries of the civilised world ought to combine to find the necessary funds. It is a matter of world-wide interest.

Proposed New Liverpool Custom-house.

WE do not quite understand the position in regard to the great excitement there seems to be in Liverpool about a scheme for a new custom-house. For some reason, the Government has proposed to grant a sum of £100,000 towards a new custom-house on condition that the Liverpool Corporation find £50,000 to add to it. On this basis, some of the Liverpool people seem to have been indulging in dreams of architectural magnificence, of a new and palatial custom-house with a grand river frontage; and considering the importance of Liverpool as a port it seems quite right that she should possess a palatial custom-house. But £150,000 will not go far towards producing such a building. And then we should like to hear what is to become of the old custom-house. Is it to be destroyed? In its plain and severe style it is a rather fine example of the old school of revived Classic architecture, and its dome has been a landmark from the Mersey for, probably, over a century. It has, therefore, a certain historic as well as architectural interest, and we should be sorry to hear of its demolition, which would, we suppose, be the natural consequence of the new scheme, though nothing seems to have been said about this so far. But it is quite certain, at all events, that if the ambitious architectural ideas about the proposed new custom-house are to be realised, a good deal more money will have to be forthcoming than has yet been talked of. It is no use trying to do architectural magnificence by halves.

The London University Site.

THE idea of purchasing the Foundling Hospital estate as a site for the London University, which was suggested in a letter in the "Times" of the 17th, seems worth consideration. It is true that the old Hospital is an institution of some historic interest, and there would be many who would naturally regret its demolition; but, on the other hand, there is the consideration that the children would be in a much better situation for their health if the Hospital were removed into the country. At the time the Hospital was founded its site was practically in the country, at all events it looked upon open fields to the north; we find in one of Jane Austen's novels a reference to the salubrity of Brunswick Square as being "so very airy." Now there are close-packed houses all round it, and the situation is quite altered; it is the case of Christ's Hospital school over again. In regard to extent and central position the site seems almost all that could be desired for the University.

Presentation to Mr. George Macfarlane.

OF few men could it be said, as was said on Thursday last of Mr. George Macfarlane, J.P., of Manchester, that he had received "all the honours, both local and national, which the building trade could confer upon him." But those who have known Mr. Macfarlane will agree that the honour thus bestowed is full well placed. Mr. Macfarlane has indeed done great service to the building trade during the period of more than forty years he has been connected with it. By his election to numerous offices this has already been recognised, but as a personal token of esteem a gift of a cabinet of cutlery, a silver tea service and tray, silver fruit dishes, and an illuminated

testimonial was made to him last week by Mr. Henry Matthews on behalf of the Manchester, Salford, and District Building Trades Association, and from friends engaged in the building trade throughout the country who had desired to contribute. Mr. Macfarlane has been called "The Grand Old Man of the Building Trade," and he has filled with dignity and distinction the presidential chairs of the Manchester and Salford Master Builders' Association, the Lancashire, Cheshire, and North Wales Federation, the Northern Centre, and the National Federation of Building Trades Employers of Great Britain and Ireland. To all these affiliated organisations his wisdom, courage, and eloquence have been of inestimable service; and while he has been always distinguished for doughtiness in debate, wherein he seldom fails "to remember his swashing blow," he is nevertheless held in high esteem for the genial and kindly disposition which is the real fountain of his always righteous indignation. There is, in fact, no man in the National Federation who is regarded with more affectionate respect than Mr. George Macfarlane, and the presentation to him is a spontaneous manifestation of strong personal regard, as well as of gratitude for long, strenuous, and self-sacrificing services in an excellent cause.

The Burlington Fine Arts Club.

THE exhibition of Italian sculpture at the Burlington Fine Arts Club is one of the most remarkable which the club has held. One exhibit alone would make the exhibition worth a visit, the low-relief bust called St. Cecilia, lent by the Earl of Wemyss, and executed in some kind of black stone. This, if we mistake not, was exhibited a good many years ago at one of the Burlington House Loan Exhibitions, when, at the instance of Lord Leighton, the experiment was tried of devoting the water-colour room to a collection of works of decorative and applied art; an experiment which we wish had been repeated since. This bas-relief, in a large circular medallion, has been attributed to Donatello, but it is not very like his work, and the compilers of the catalogue evidently do not support this ascription; they suggest Desiderio di Settignano as the possible author. But whoever executed the work, it is one which may vie with the finest productions of Greek art.

Among the many fine works exhibited is a cast from Donatello's bas-relief of the Crucifixion, the bronze of which is in the National Museum at Florence, a work of great dramatic power. There are a good many relief subjects of the Madonna and Child by various artists; one of the finest is a work by Rossellino, towards the end of the fifteenth century. The low-relief "Profile of a young man crowned with laurel," lent by Mr. Newall, is a remarkable work, attributed to the latter part of the fifteenth century, but to which no sculptor's name can be attached. The genius of Settignano is displayed in the beautiful and expressive bust of "A Princess of Urbino," lent by Lord Wemyss, a work of the greatest refinement and dignity. Among the Madonna subjects is a very fine one by a sculptor known as "The master of the marble Madonnas"; in this the head is brought out into high relief; the interest of this work is rather in the execution than the expression, for the head is secular rather than spiritual in character. Among other works arranged round the room may be mentioned a small but singularly graceful composition of the Virgin and Child by Luca della Robbia, and a small alto-relief group of the dying Antony and a nude Cleopatra, the figures almost in the round—Baccio Bandinelli is suggested as the possible author of this fine little group. Four glass cases are filled with small bronzes of great variety of subject, and many of them very fine. The impression given by the whole exhibition is that the Italian sculptors of the fifteenth century came very near to the standard of ancient Greek art, in their best work at all events.

FAME AND THE ARCHITECT.

BY DARCY BRADDELL.

THERE is a story told of the late Sir Edward Burne-Jones, that when he was at the very zenith of his fame he came across an old gentleman in Birmingham who had been his drawing master in very early days. "Why, if it isn't Ned Burne-Jones!" said the old man, and thereupon stopped and talked to the great "B.-J." At the end of their conversation the old gentleman blandly inquired "Are you still keeping your drawing up?" This story is probably quite untrue, but that is of no matter. The fact remains that Burne-Jones *was* a famous man during his lifetime, as well as after.

Now, supposing that, instead of expressing himself in paint, he had been drawn by his love of mediævalism and mysticism into the meshes of architecture, the whole point of the apocryphal little story would have fallen to the ground for the very simple reason that he could never have been a famous man. The modern architect is not famous if compared with the leading men of the sister arts of painting and sculpture of to-day.

Should anyone have doubts on this point, I ask him as a member of ordinary cultivated society to enter any drawing-room he pleases, and discover of the occupants thereof three architects practising to-day whose names are the household words that Mr. Sargent's, Mr. Frank Brangwyn's, and Mr. J. J. Shannon's are. I think it can be safely said that he would have a difficult task indeed.

As to the hopeless obscurity a young architect is compelled to live in, no matter how much really good work he may have carried out, one has only to consider the celebrity which two of his contemporary brother artists—Mr. Gerald Kelly and Mr. Glyn Philpot—have already attained to realise the futility of even discussing it.

In America this unbalanced state of affairs does not go on. One of the greatest surprises that anyone interested in modern architecture in this country can have is to talk to an American woman and discover how keenly interested she is in the architecture that is going on in her own country, and how extremely well known to her are the modern American architect's name and work. We have got to such a pitch of apathy in our own architecture nowadays that, were the whole of Regent Street pulled down from end to end and rebuilt in a single night by a second Inigo Jones, not a syllable of his name would ever be divulged to the general public in the Press the next morning. The particular firm of contractors employed, the innumerable statistics of the numbers of workmen engaged, the tons of steel and stone required, the acres of glass, and so forth—all these would be mentioned; but the architect's name? No! not a word. Has this deplorable state of affairs always gone on in the days of the past? Most certainly not. In 1792, when Robert Adam died, he was buried in Westminster Abbey, and his coffin was borne by eight peers of the realm. During his lifetime, not content with his huge practice, he must needs wade into building speculations and, indeed, get woefully out of his depth; but so great was the influence at his command that he actually succeeded in getting an Act of Parliament passed to enable him, without falling foul of the law, to raffle Adelphi Terrace (the speculation in question) at £50 a ticket!

To turn to earlier times still; Christopher Wren and Inigo Jones were both infinitely better known than either Peter Lely or Kneller, and it is sincerely to be hoped they will always remain so. Most of us have heard of Vanbrugh, and not a few of George Dance, William Chambers, Kent, Soane, Nash, and, later still, Pugin. All these men had their fair share of fame, and were looked upon by society as great artists.

"All this is very fine and true," says the gentle reader, "but these men you have mentioned all deserved their fame; they were exceptionally brilliant men. Modern architects are not; they are very dull ordinary folk. As

for being artists, what have they got to do with art? Why on earth should they be famous?"

I suppose that the modern architect refuses to believe that this is the opinion of society. Perhaps, then, the next time he dines among the philistines (I refer to barristers, doctors, merchants, and such-like), when he propounds his theory that modern architecture is an art and should be looked upon as such, he will explain why his remark has been treated with the pitying smile that usually follows it. Perhaps he will go even further, and explain why the term "artist" is never applied to him, however important and superb a building he may have just erected, while any incompetent dauber assumes by his or her natural right that title.

As this is an age of science and mechanics, and probably at no time in the history of the world has thought become so shallow and slovenly as it is to-day, the art of this and other countries must suffer. The easy transmission and exchange of other people's ideas, the flooding on the market of cheap and, consequently, valueless information, have all done their deadly work, and the real thinker among the art patrons of to-day is as rare as the dodo. The result is that art has taken a back seat, no matter what the present-day artists like to think to the contrary. The peerage of England no longer takes a pride in discovering and making an artist, whether he is architect, painter, or sculptor. Turn a moment to the history of England, and you will read of Inigo Jones that "he attracted, by his skill in drawing, the attention of a nobleman, who sent him to Italy to study the art of architecture and landscape painting." Of William Kent, that "he was taken up and made much of by Lord Burlington"; of Nash, who built Regent Street, that "he was the favourite architect of George IV." You read of how, in the eighteenth century, all the peerage of England regularly made the "grand tour," and visited Italy, where they studied architecture, so that they might have the knowledge to choose the very best talent to build that noble series of palaces which stands to-day a memorial of the splendours and glories of the eighteenth century.

Alas! The Burlingtons, the Ilchesters, and the rest, are dead and gone. Their descendants have departed, most of them, into the City, where they direct companies; or into the garage, where they perform a like office to motor-cars.

This age of democracy has seen the rise of County Council schools, polytechnics, and innumerable provincial art schools. They all have scholarships for their promising students. The result has been, of course, that the art patron of the present day no longer feels it incumbent upon him to secure some knowledge of the art of his own time so as to be able to encourage it personally and in the proper direction. That, he argues, is the business of the National Art Schools, with their scholarships and travelling studentships. The patron consequently lives his life in a state of abysmal ignorance and apathy. There are some, it is true, who, deeply versed in the defunct art, are ardent devotees at the shrine of "Christie's." There they vie with the dealers for what their prototypes of past ages had the temerity and sagacity to commission for themselves from the artists and craftsmen of their day.

It may be argued that America is a flourishing democracy and yet has arrived at an architecture that is far in advance of ours in England. But, it must be remembered, America is a polyglot country, with no architectural past worth considering. The American millionaire, standing to his country to-day as the peerage of England stood to theirs in the seventeenth and eighteenth centuries, in that he is the man with the money-bags, realises this, and has commissioned his architects, with whose work he, or rather his wife, is thoroughly acquainted (just as society in England is acquainted with the work of Mr. Sargent and Mr. J. J. Shannon), to build for him on modern and palatial lines.



THE NEW HOUSES OF PARLIAMENT, STOCKHOLM. A. JOHANSSON, ARCHITECT.

He has no fear of spending money; he allows his architect very much more scope than we ever give him here. It is true that when his palace is finished he proceeds to fill it with the bones of dead and gone ages of Europe. Pictures and statuary, unfortunately for modern American painters and sculptors, are not difficult objects to convey across the Atlantic. A house, on the other hand, in spite of Tattershall Castle, is practically beyond this pale.

Millionaires are not wholly idigenous to the Western world; we have them here. But it must not be forgotten that we have an impoverished peerage and a large number of magnificent old houses. It is this fact that makes the great difference in architecture between ourselves and our American cousins. For our self-made plutocracy, instead of having the artistic courage to build large new houses of their own, are tumbling over one another to secure the fine old mansions of the impoverished peers, just as they also prefer to give fancy prices for antique furniture, silver, tapestries, and so forth, instead of commissioning the countless capable men of their own times to design fresh things for them.

It is to this lack-lustre patronage, this blind and, in many cases, absolutely ignorant worship of the antique that we must ascribe the decay of modern art.

The patron, wholly unversed in good taste, because the art schools have taken his proper patronage out of his hands, is now terrified of the blunder of not "getting his money back," and goes about in his complacent way saying "What awful stuff modern art is!" If anyone has the pluck to stand up and tell him he does not know what he is talking about, what coals of fire he will pour out on his unfortunate victim's head!

Very well, then, let us admit that owing to the various reasons that have just been discussed, architects to-day are not the equals of their departed brethren who practised in the seventeenth and eighteenth centuries, and let us agree that they do not deserve the fame those men attained. It does not alter the question, however, "Why should architects be less famous than sculptors and painters?" and "Why should the title 'artist' be solely applied to painters?"

It would not be difficult to contend that the architecture of to-day, although it has sunk from the high level it reached during the eighteenth century, is every whit as good as the painting and sculpture that are being carried out at the moment.

The answer to the two questions is quite a simple one. Architecture is the most scholarly and erudite of all the arts; it is consequently extremely difficult for the uneducated mind to comprehend its beauties and its failures alike. "A little knowledge is a dangerous thing." With the exception of admirable if desultory efforts made by the "Times" and, I think, the "Evening Standard," but leading to nothing, as far as the rest of the Press were concerned, no attempt has been made at critical notices of modern architecture by any popular journal, illustrated or otherwise, that is not solely devoted to art topics. Consequently, the unhappy public are compelled to do what they hate more than anything else—make up their minds for themselves. It is much easier to state without making a fool of oneself where any work of art does not please than it is to say where it does please. Therefore, the man in the street always condemns any new building because he likes best the line of least resistance. The state of affairs where a daily Press will give half a column to a trifling exhibition of water-colour sketches which are only going to be on show for three weeks at a Bond Street gallery, and not a single line of genuine or able criticism to an enormous building which has just altered the entire aspect of a main street of London, is one for angels to weep over.

It is high time for the Press to mend its ways and attempt to educate a public that at the present moment has neither the capacity nor the inclination into some reasonable appreciation of the architecture of their own times. They might not make a bad start by mentioning the architect's name when they turn out these wonderful reports of the laying of foundation stones by Royal personages.

I am perfectly aware that it does not really matter to a man whether he has recognition in his lifetime or not, but it is a very serious position for any art to find itself, as the art of modern architecture is finding itself to-day, where everyone practising it is refused anything like a really fair meed of recognition among a public who, after all, are its direct patrons. And as no rational interest in architecture is being taken by the Press, the schoolmasters of the public, not only are architects compelled to live in obscurity, but—far more important—so is the art of architecture.

A final word as to the abuse of the word "artist." I have tried to discover when this word first assumed its present

meaning: certainly not in the eighteenth century. Adam and Reynolds always referred to themselves as "architect" and "portrait painter." I believe I am right in saying that in no other country in the world does it solely apply to the painter's craft, as it does here.

Let the Press cease from indiscriminately labelling all painters as "artists." The word can be very easily left for the memorial tablet, the tombstone, and the statue. Better still, let the painters think twice of their last efforts before they unblushingly arrogate this title to themselves.

THE NEW HOUSES OF PARLIAMENT, STOCKHOLM.

THE design of so large a building as a new Parliament House generally affords plenty of scope for talent, and this was so in the case of the new Houses of Parliament at Stockholm. There are few more picturesque cities in Europe than the capital of Sweden, with its varied contour and its abundance of water; but these favourable natural conditions have not always been exploited or considered in the happiest manner in the placing and designing of new buildings. Opinions were very much divided when the Helgeandsholmen, a small islet, was finally selected as the site of the new Houses of Parliament, and the choice gave rise to a heated and protracted discussion. The Stockholmers were afraid that the new Houses would detract from the grandeur and dignity of the castle opposite; and, worse still, would interfere with the freedom of the view up and down the stream in the midst of which it now rises. On the other hand, one cannot wonder at the legislators giving preference to this position, which, from their point of view, is perfect. Mr. Aron Johansson, the architect, had a difficult task set him. The foundation-stone was laid with much solemnity on May 13th, 1897, and the building was ready for the 1905 Riksdag on its assembling in January. At the back the building has, by means of arches, been connected with the new building of the National Bank of Sweden, the two buildings supplementing each other architecturally so as to constitute an excellent whole. The material used for the outer surface is granite, which imbues the structure with a restful strength, and lends itself equally well to the mural motifs of decoration and to the large coats-of-arms over the main entrance, as well as to the four large figures representing the four classes or

"Stander" of the kingdom, and the still larger figure of Svea (Sweden) which crowns the central portion. Columns and pilasters have been used with considerable effect; though exception might perhaps be taken to the grooving between the stone blocks of the ground storey being somewhat exaggerated—a defect often noticeable in Germany, the town hall of Hamburg being a flagrant example. The illustrations are, however, sufficiently clear to make any detailed description unnecessary.

The interior may, in a way, be said to form a contrast to the outer treatment of the building, inasmuch as plaster and paint have been resorted to in lieu of marble or stone. Light colours predominate on the ground staircase and in most of the rooms and corridors, and the impression received is perhaps not quite what one expects in the palace of a country's legislature. The arrangements, however, are practical throughout, and many details have been most carefully considered. The halls for the two chambers are octagonal, panelled (with beech wood), and awaiting some final artistic decoration. Both these halls have top lights.

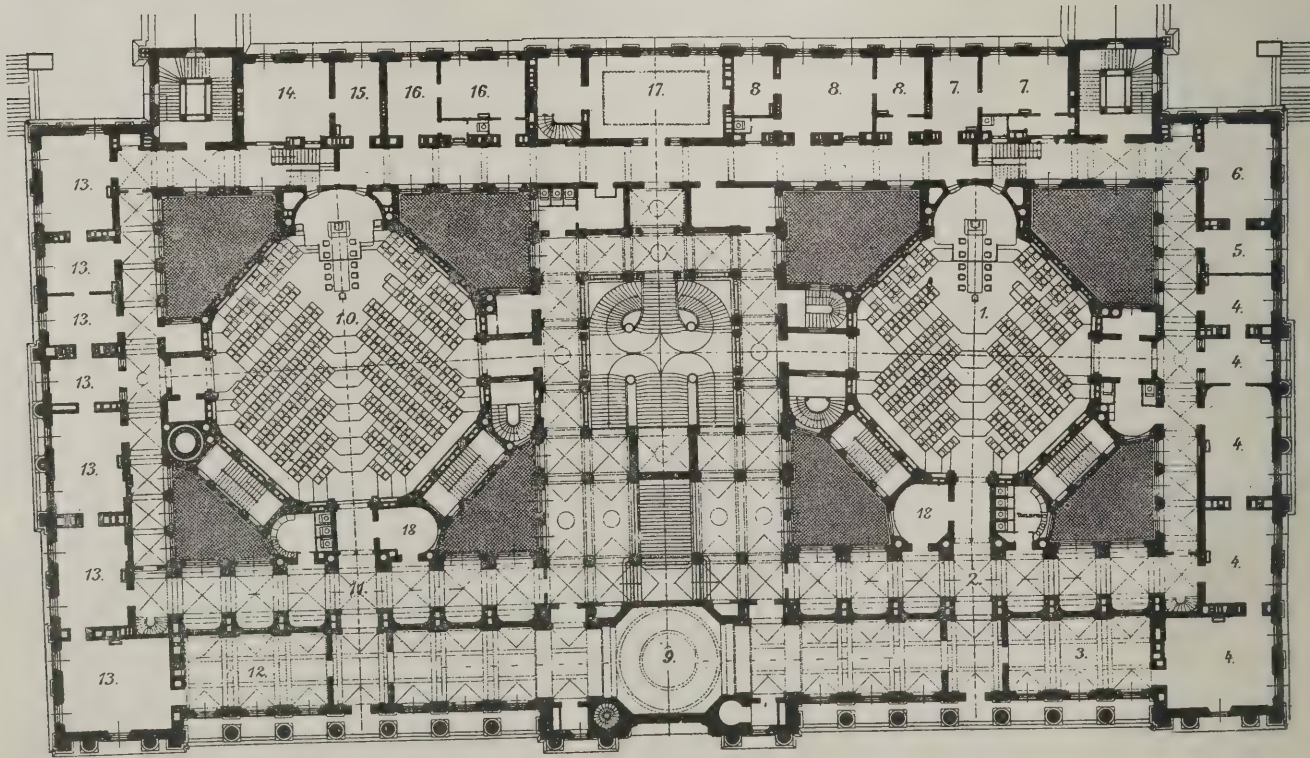
The dimensions of the building are—length 350 feet, width 190 feet, and height from pavement to top of roof 72 feet.



NEW HOUSES OF PARLIAMENT, STOCKHOLM:
ARCHES CONNECTING WITH THE NATIONAL BANK OF SWEDEN. A. JOHANSSON, ARCHITECT.

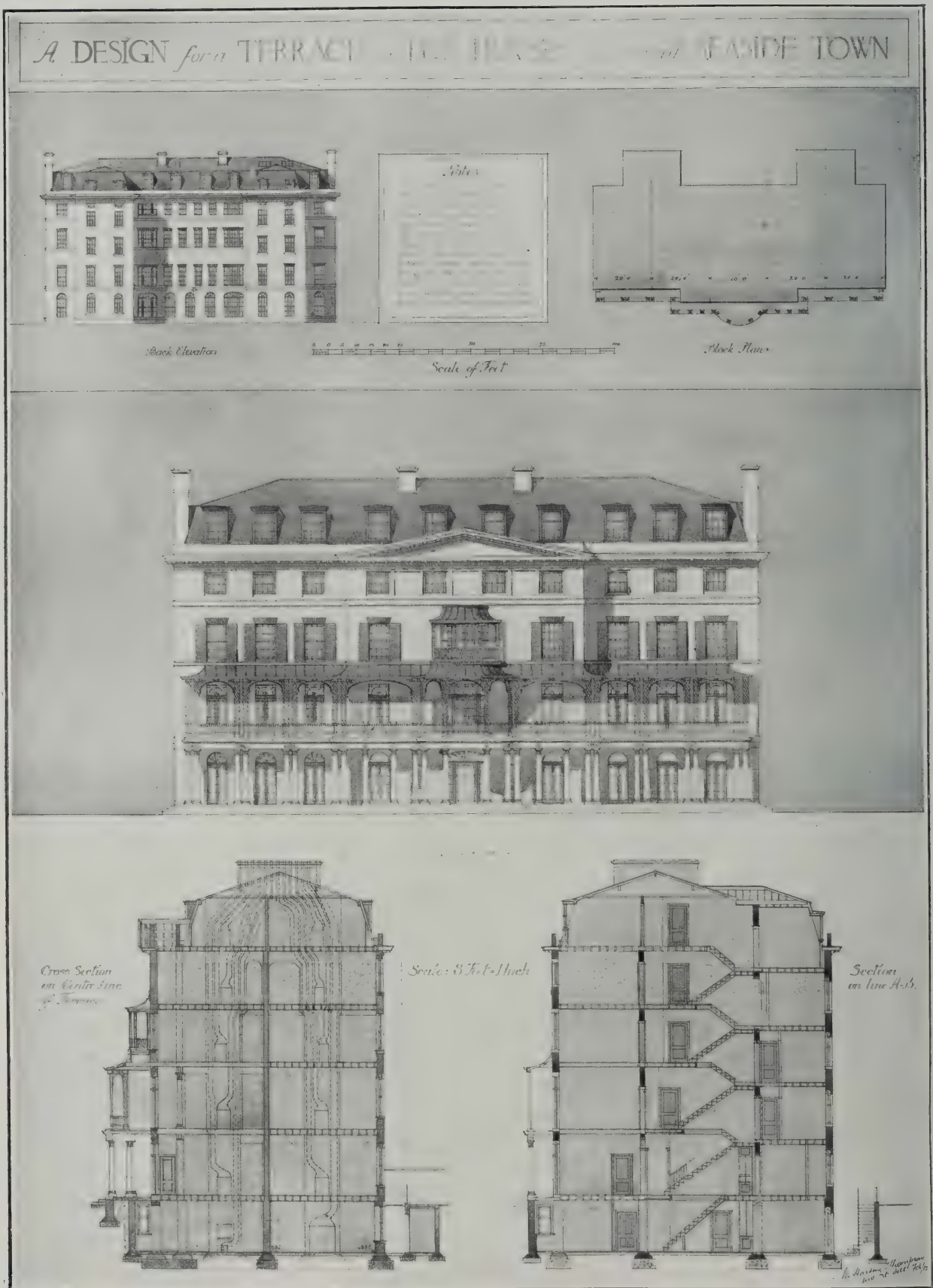


The First Chamber.



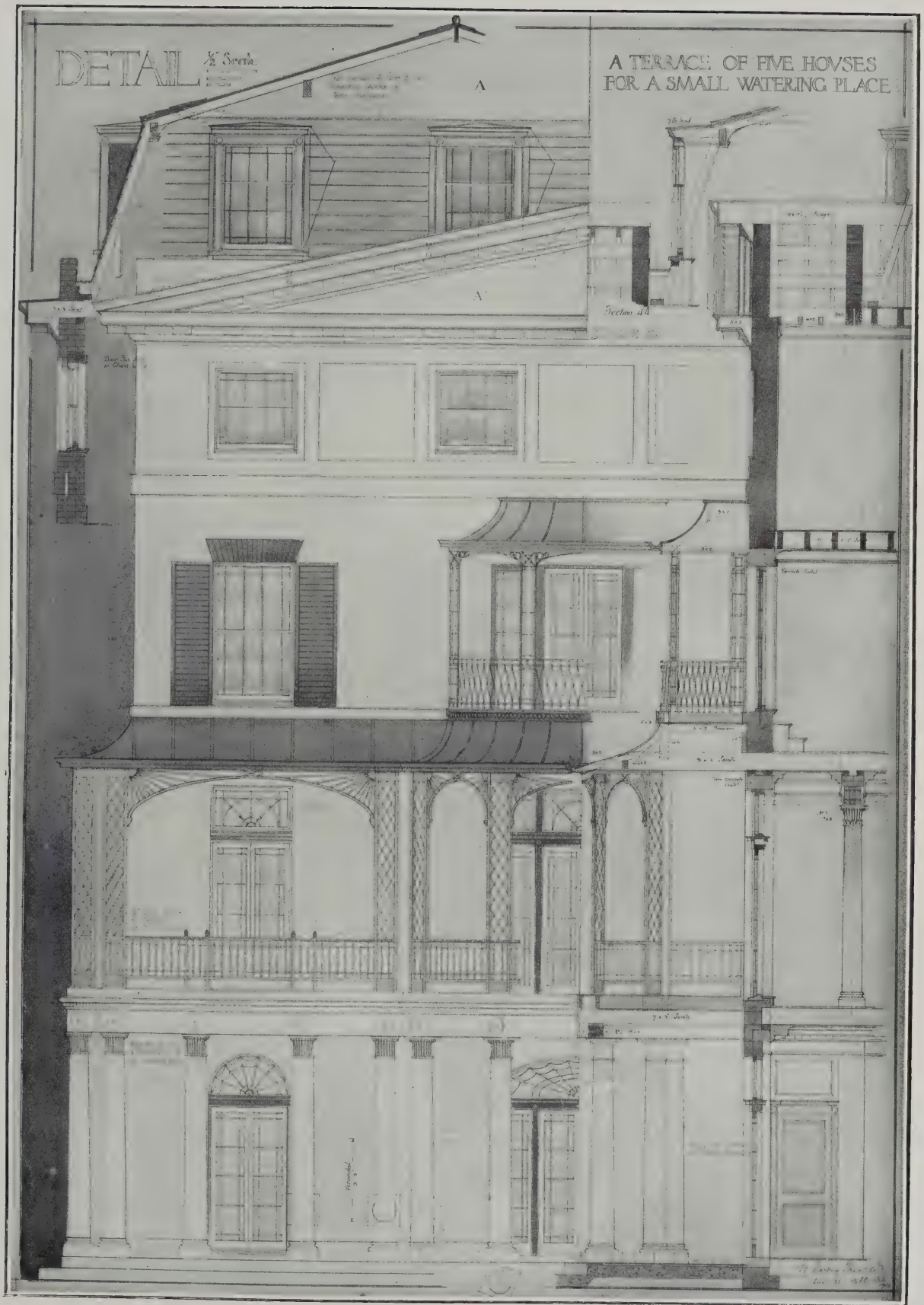
1, First Chamber; 2, Cloakroom Corridor; 3, Refreshment Room; 4, Club Rooms; 5, Secretary; 6, Secretary's Clerks; 7, The Speaker (First Chamber); 8, Council of State; 9, General Meeting Hall; 10, Second Chamber; 11, Cloakroom Corridor; 12, Refreshment Room; 13, Club Rooms; 14, Secretary's Clerk; 15, Secretary; 16, The Speaker (Second Chamber); 17, Great Library; 18, Telephones.

Principal Floor Plan.



BY W. HA

These drawings are two of a set now being circulated among the Allied Societies by the
the new alternative scheme of Problems in Design which are to take the place of 1



G THOMPSON.

and of Architectural Education as examples of the style of draughtsmanship approved under
 copies of Study for the Final Examination of the Royal Institute of British Architects.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief, and to write on one side only of the paper.

The R.I.B.A. Elections.
To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The Institute Members' Club have issued a circular to members of the Institute exhorting them to vote only for those candidates for the Council who will be active in promoting "a strong and vigorous policy" in favour of the immediate preparation of a Registration Bill, and giving a list of the candidates who can be counted on for such action.

As one who considers Registration to be a farce, I feel much indebted to the Club for furnishing me with this list, and will take care to strike out all those names in my voting paper; and I hope those who think with me will do the same.

A FELLOW OF THE INSTITUTE.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Regularly with the advent of the R.I.B.A. Council and Committees elections each year there appear in the columns of the professional Press pathetic letters from gentlemen asking for instruction and help in filling up their voting papers. Such an one has appeared within the last fortnight, reiterating the same old complaint in the following terms:

"The time will soon arrive again when the members of the Institute will have to elect their representatives on the Council and various Committees for the coming year, and bearing in mind the difficulty the average member has in deciding for whom to vote, I venture to inquire if something cannot be done to assist him in his selection.

"I think I am safe in saying that to most members many of the candidates—particularly new ones—are comparatively, if not quite, unknown, or if known, their ability, work, and experience are not. It must be remembered that the architect gains his knowledge of his professional fellows chiefly by means of the building journals and the various particulars of buildings they publish. Now there are many men of large practice whose names never seem to get into print, and whose drawings are never published; it follows then that these men are probably unknown to their brother architects, and when, as sometimes happens, they are listed among the candidates, they invariably fail to receive sufficient support for election, notwithstanding that their experience is far greater than [that of] many of those who do manage to gain a seat."

... I think that many, both on the Council and off, must agree with the entire truthfulness of the statement above quoted, and I am convinced it is a matter which should be inquired into with a view to adopting some procedure to more satisfactorily meet the needs of these progressive days.

I believe there exists an almost unanimous feeling against individual canvassing in a body such as ours, but this does not prove the case *pro* or *contra*. In the case of Parliamentary candidates, and I believe I am right in saying in other of the professions (closed and otherwise), canvassing is adopted as a matter of course, without where everyone is on the same footing) any great harm ensuing. Personally speaking, I can see very little difference

between canvassing openly and canvassing by such means as writing letters to the professional Press just previous to the elections by gentlemen who are candidates for the same. The professional Press of the last few weeks provides some delightful instances of what can be done in this way.

The writer of this letter is also a candidate, but in his case he desires to carefully retain his anonymity, and therefore signs himself

MEMBER, R.I.B.A.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Re paragraph p. 516 in your issue May 15th, entitled "To R.I.B.A. Associates," as the seconder of Mr. Bonner's motion on March 4th it is satisfactory to me to see that apparently action is being taken in the matter of increased representation of Associates on the Council; but whilst welcoming any procedure which can help the Council to a just conclusion (and incidentally add to the Institute coffers), I fail to see of what service the information they seek can possibly be, in that the mere sending in of such information is by no means the whole of the liability, as, apart from anything of the kind, before any Council could formulate

a statement for or against, it would be necessary for each correspondent to complete the matter by sending photographs, working drawings, statements of his own and his proposers, as to his professional education, etc.

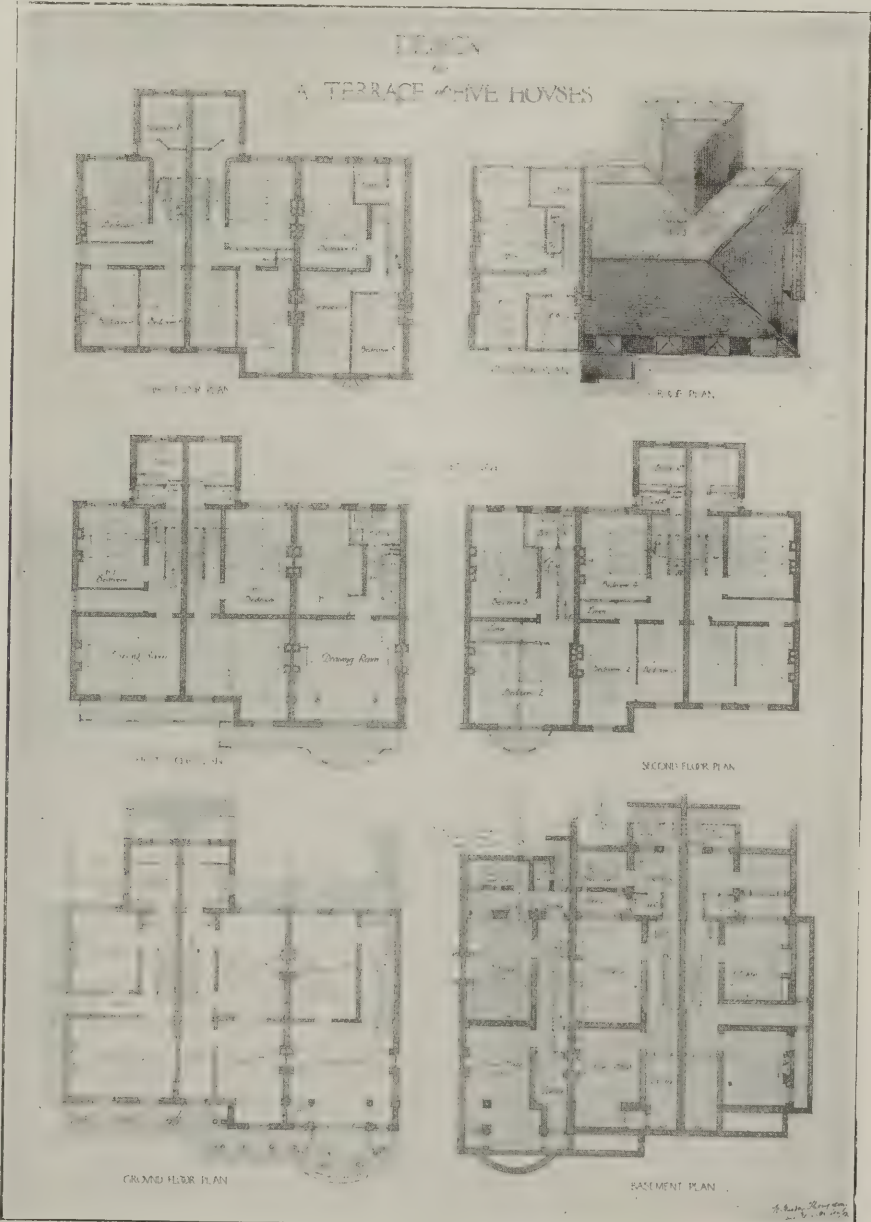
Granted this, that might not be the finish, for I venture to anticipate that should the Associates as a class conceive the idea that to meet their just demands for increased representation the Council were "going out of their way" to, figuratively speaking, "rope in" half-hearted members, there might be seen a similar state of things to that which obtained about five years ago.

As one who has fought from the very first for fair dealing for the Associates, I venture to suggest that two classes having been set up within the Institute, representation equitable to both should speedily be arrived at for the well-being of the Institute.

THE SECONDER OF MR. BONNER'S MOTION, MARCH 4TH.

OUR PLATE.

Design for a Terrace of Seaside Houses.
The design by Mr. W. Harding Thompson for a terrace of five houses in a seaside



BY W. HARDING THOMPSON.

town, reproduced as the centre plate in this issue, is not only interesting in itself, but more particularly for the reason that it is one of two sets now being circulated among the Allied Societies as examples of the kind of draughtsmanship desired for the new Problems in Design which are to take the place of the Testimonies of Study for the Final Examination of the Royal Institute of British Architects. The subject of the design in question was one of two under Subject I., the other being a monument to King Alfred, Mr. H. Chalton Bradshaw's design for which was reproduced in our issue for May 8th. Both Mr. Thompson and Mr. Bradshaw, it may be mentioned, are students at the School of Architecture, Liverpool University.

The third subject set comprises (1) a detached ball-room to a large country house, and (2) a landing stage to a river or lake, with a restaurant, the drawings for which have to be sent in to the Board of Architectural Education by June 30th next.

COMPETITIONS.

Hale Town-Planning Competition.

With respect to this competition, Mr. Arthur S. Brewis, Secretary of the Manchester Society of Architects, has addressed the following circular, dated May 16th, to the members of his Association:—"Dear Sir,—Since sending you the notice dated 29th ult., my Council are glad to say that the District Council have reconsidered their decision, and have agreed to revise the conditions in respect to the three points named, viz.: To issue a plan of the district

for the competitors, with particulars, up-to-date, of houses, sewers, and main levels. To delete the clause in their conditions asking for the architect's inclusive fee for subsequent work. To appoint a competent advisor, to be approved by the Council of the Manchester Society of Architects, to assist the Committee. An extension of time for sending in plans will be given. My Council instruct me to inform you that these conditions as revised are satisfactory. My notice of the 29th ult. is therefore withdrawn.—Yours faithfully, ARTHUR S. BREWIS, Secretary."

Elementary School, Knavesmire.

Twenty-nine of the 203 designs submitted in this competition are on view (May 17th to May 31st) in the South Galleries of the Exhibition Building, York. The assessors, Messrs. T. Mellard Reade and Son, awarded the first premium to Mr. J. T. Proffitt, of Walkden.

New School, Greenock.

The Greenock School Board last week appointed Mr. William R. Glen, Glasgow, architect for the new school which is to be erected in the West end of the town. Mr. Peter Caldwell, Paisley, was placed second (premium, 40 guineas) and Mr. James Rome, Kilmarnock, third (premium, 30 guineas).

Competition for National Welsh Sanatoria.

The Executive Committee of the King Edward Welsh National Memorial for the Prevention and Abolition of Tuberculosis

met on Thursday last at Westminster, when it was reported that the total promises and donations amounted to £201,740. It was decided to advertise for suitable architects, with a view to the erection of sanatoria, and Sub-Committees were appointed to go into the question of sites.

LONDON MASTER BUILDERS' ASSOCIATION.

The Council of the London Master Builders' Association met on May 9th, when there was a particularly large and influential attendance. The chair was occupied by the President (Mr. James S. Holliday).

The Special Committee which was appointed to confer with the representatives of the carpenters and joiners *re* working rule agreement submitted its report of the conference held on the 1st instant, which was unanimously adopted.

The operation of the National Insurance Act (1911) was considered, and the Council decided to formulate instructions to be sent to the members of this Association for their guidance in carrying out the requirements of the Act.

Various correspondence was read relating to trade matters, including the Railways Bill.

The following were elected members of the Association:—Ordinary members: Messrs. H. J. Carter, Ltd., London and Grays, Essex; Messrs. Bovis, Ltd., Upper Berkeley Street, W. Associate member: Mr. J. B. Smith, 117, Hampstead Road, N.W.



EPSOM PARISH CHURCH. NICHOLSON AND CORLETTE, FF.R.I.B.A., ARCHITECTS.

Photo: Cyril Ellis.

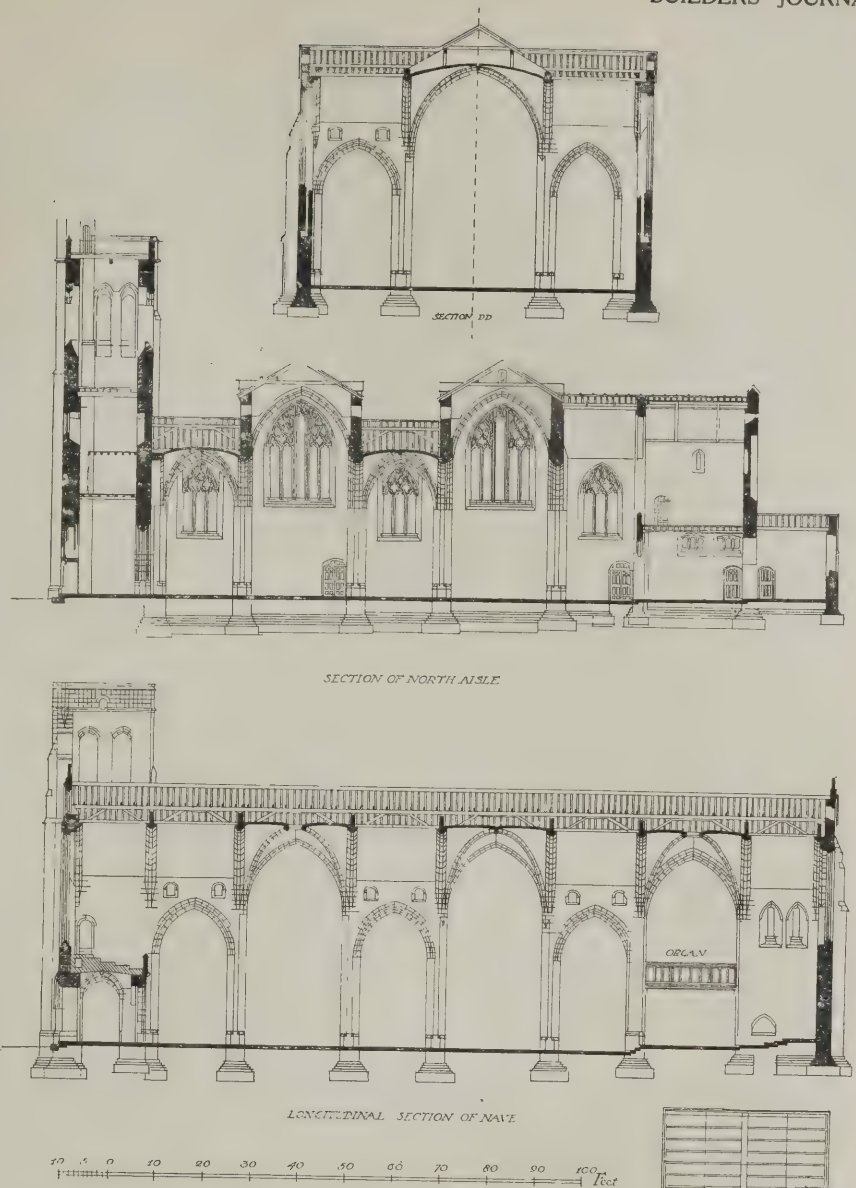
EPSOM PARISH CHURCH.

The walls of this church are rubble built in mortar, with brick bonding courses at intervals, and about 3 ft. in average thickness. The piers are of ashlar masonry, and carry a system of alternating barrel and intersecting vaults. The bays are divided by broad transverse arches carrying the vault webs and also thin brick partition walls, which serve instead of wooden roof trusses. The long purlins from wall to wall are braced and strutted longitudinally, and a light roof of spars, boarded and slated, is laid on these.

The barrel vaults are of concrete with slight reinforcement. The groined bays are filled in with chalk, and the ribs are all of wrought stone. The external flats over the organ loft and aisle bays are of Kleine brick construction.

The thrusts in this building are dealt with by providing buttresses partly internal and partly external, as will be seen from the plan. But in joining the west end of the new church to the east end of the old one, which is to be pulled down when the permanent west end is built, it was not possible to provide buttresses of the proportions adopted for the permanent structure. The angles of the bay of groining at the west end of the portion of the new church first built were therefore strengthened with diagonal steel rods embedded in a cement-concrete filling at the back of the vault web. The result has been satisfactory so far, as no indications of any movement have been detected. But the whole stability of the structure will be increased when the western bays can be completed.

In a church of this design it would appear that the thrusts are largely neutralised by the interposition of barrel vaults between the groining bays. The lighting of such a building is also satisfactory, as the windows can be kept up and a considerable effect of internal space can be obtained with moderate dimensions. Messrs. Nicholson and Corlette, F.F.R.I.B.A., were the architects, and the builders were Messrs. Benfield and Loxley, of Oxford.

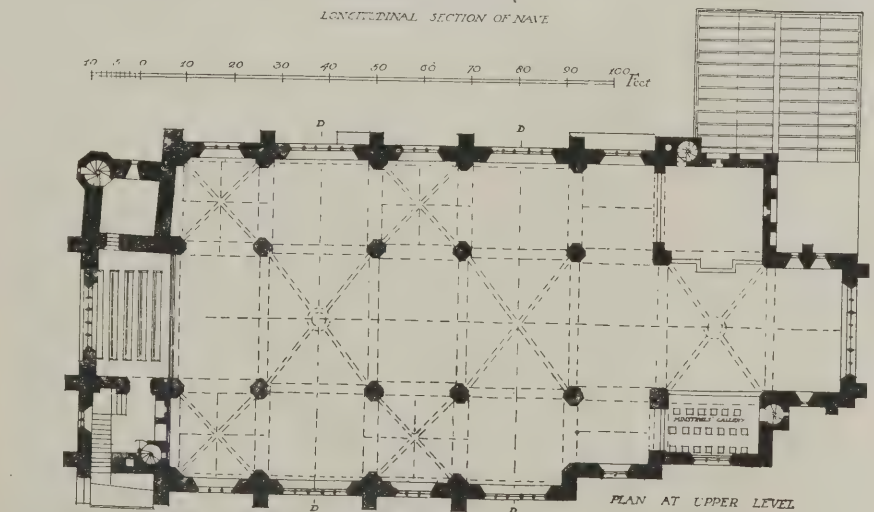


THE LONDON COUNTY HALL.

Premature Complaints of Delay.

At last week's meeting of the London County Council complaints were made of the rate of progress in the building of the new County Hall, and the Finance Committee was instructed to consider how the work can be expedited.

The subject arose on the Establishment Committee's vote of £72,150, which formed part of the annual estimates of the Council. Mr. J. D. Gilbert said the work was proceeding very slowly. As far as the man in the street could judge, the raft and part of the foundations were all that appeared to have been built up to the present, and the work would not be finished until 1916, which time was longer than any private firm would allow. Mr. Edward Smith said that when a deputation visited the site during the preceding week only sixty-two persons were at work there. At the present time for its various offices in thirty-seven different centres the Council was paying £1,000 a week in rent, and at the present rate of progress they would not be in the new hall by 1926. Mr. F. L. Dove declared that the contractors were well ahead of their time, and that the drawings for the superstructure had not yet been passed. He believed that the building could be finished before 1916 by



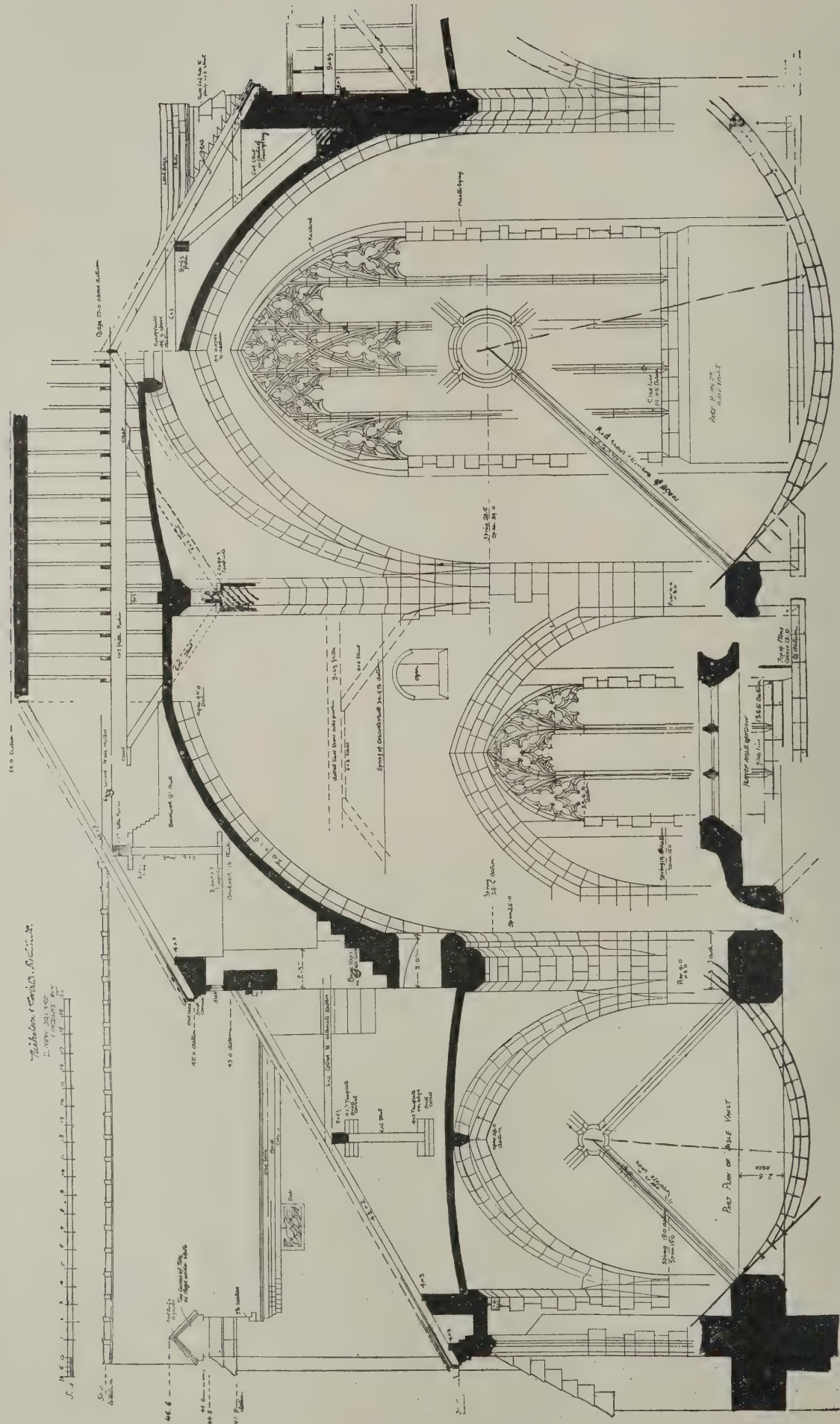
EPSOM PARISH CHURCH. NICHOLSON AND CORLETTE, F.F.R.I.B.A., ARCHITECTS.

offering a premium for earlier completion when the contract for the superstructure was issued.

Sir E. White said that on visiting the site he was told that there were sixteen bricklayers employed. As a matter of fact there was room for 300 bricklayers for months to come. There ought to be 600 men at work on the site, which was singularly well favoured. The trouble was due to the fact that all the plans and details had to be approved by two architects. They would be lucky if they got the building finished in seven years. The present delay would go on unless some drastic

measures were adopted. Mr. I. Salmon, chairman of the Establishment Committee, stated that it was unfair now to raise the question of delay, as in 1907 they were told that the building could not be finished before 1918. In fifteen months' time the whole substructure would be finished, and they would then be able to start on the superstructure, which would probably take three years to build.

Mr. Evan Spicer moved an amendment instructing the Establishment Committee to consider how the work could be expedited, and this was unanimously agreed to.



EPSOM PARISH CHURCH: DETAILS, NICHOLSON AND CORLETTE, F.F.R.I.B.A., ARCHITECTS.

NEWS ITEMS.

Charter for Irish Antiquaries.

A charter has been granted, under the Great Seal of Ireland, to the Royal Society of Antiquaries of Ireland, of which Count Plunkett, H.A.R.I.B.A., is president.

Mr. Benjamin Morton.

The death is announced of Mr. Benjamin Morton, Bakewell, who for many years carried on an extensive business as a builder and contractor in Manchester and elsewhere. Mr. Morton was seventy-two.

The Auctioneers' Institute.

Mr. Arthur William Brackett has been elected to succeed Mr. John Marks as President of the Auctioneers' and Estate Agents' Institute. Mr. Brackett, who was elected a Fellow of the Surveyors' Institution in 1886 and of the Auctioneers' Institute in 1894, was President of the Estate Agents' Institute in 1906-7.

Surveyors' Visit to Nottingham.

It has been decided to hold the next country meeting of the Surveyors' Institution at Nottingham on May 30th and 31st. Visits will be paid to various factories and to the Derwent Valley Waterworks, while there will also be an excursion to "The Dukeries," members driving through Thoresby and Clumber to Welbeck.

Decoration of St. Peter's.

Next month the work of covering seventy-six pilasters in the interior of St. Peter's, Rome, with white marble will begin. This gigantic task, for which an international subscription has been opened, is estimated to cost £1,400 per pilaster, or £106,400 in all. The Pope is taking great interest in this long-projected completion of the internal decoration of St. Peter's.

Advertisements on Bridges.

At last week's meeting of the London County Council a recommendation to the effect that the South-Eastern Railway Company be granted permission to place an advertisement of certain ales and stout on the bridge carrying the railway lines over Southwark Bridge Road was referred back. The vote followed a discussion in the course of which Mr. Pilditch asked the Council to imagine the effect on the Embankment if these advertisements were to be allowed on all bridges.

Liverpool Cathedral.

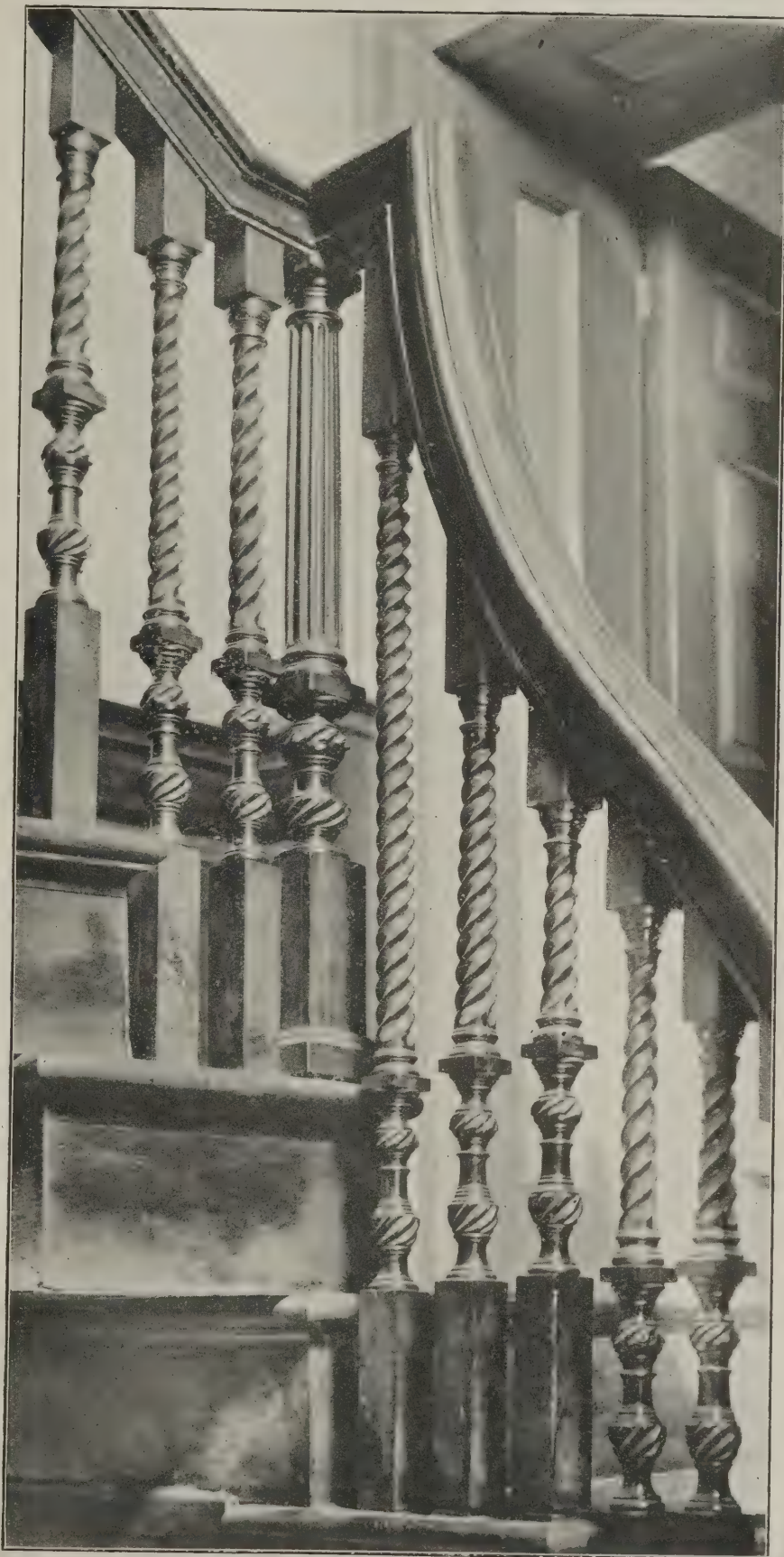
Sir William Forwood, on behalf of the Liverpool Cathedral Committee, announces that it is their ambition to complete the first part of the cathedral within the next four years. During the past ten years the Committee have collected £327,827, and have had special offerings for fittings, furnishing, etc., valued at £75,355. The completion of the lady chapel, choir, vestries, and chapter house will exhaust the funds. The cost of the nearest choir transepts will be £74,000, and to enable them to be consecrated with the choir the money must be obtained before the close of this year.

The Two New London Bridges.

At a dinner given by him at the Savoy Hotel last week, the Chairman of the Bridge House Estates Committee of the City Corporation, Mr. J. W. Domoney, said that now that the Act was passed the improvement of Southwark Bridge would be begun almost immediately. The tenders

would be considered within the next few months, and he estimated that the improvement of the bridge would be completed within two years and a half. The Committee would be able to start St. Paul's Bridge practically as soon as Southwark Bridge was completed, and meanwhile arrangements would be made for the approaches to that structure. With

Mr. Basil Mott, the engineer responsible for the improvement of Southwark Bridge, would be associated Sir Ernest George, A.R.A., in the capacity of consulting architect. Mr. Mott would also be the engineer for St. Paul's Bridge, and an eminent architect, whose name he could not yet announce, had been approached with a view to assistance.



DETAIL OF STAIRCASE AT REDLAND COURT, BRISTOL. JOHN STRAHAN, ARCHITECT.

MANCHESTER'S OLD TOWN
HALL.

Difficulties about its Re-erection.

The opposition of people in the Rusholme district to the proposed re-erection of the façade of the old Manchester Town Hall in Platt Fields, on a site within the park opposite Norman Road, was again expressed at a conference held last week between the Parks Committee, the representatives of Rusholme Ward on the City Council, and Sir Edward Donner and Mr. William Royle, leading residents in the district. Mr. Alderman Harrop, chairman of the Committee, presided.

Mr. Alderman Ashton (chairman of the Birch Fields, Platt Fields, and Whitworth Park Sub-committee) said that if the Parks Committee adhered to their decision to re-erect the façade at the place indicated a public meeting of protest would be held against the scheme. Rusholme people would have nothing to do with it, and they suggested that Heaton Park would provide a much more suitable site.

Sir Edward Donner thought the structure would be an eyesore and a blot upon the landscape.

Mr. E. F. M. Susman, Mr. W. F. Lane-Scott, and Mr. J. D. Chantler (the councillors for the ward) appealed to the Committee to reconsider its decision, the last-named speaker describing the façade as a "gloomy monstrosity."

In the course of the discussion the City Architect (Mr. H. Price) said in reply to a question that the stonework could not be cleaned without spoiling it.

Mr. Edgar Wood (president of the Manchester Society of Architects) asked by the chairman to give the Conference the benefit of his views, denied that the Committee's scheme would in any way injure the park. He said that the structure itself was too fine a thing to spoil any park, and indeed he knew no park really worthy to receive it. He contended strongly that there was no force in the arguments of those who opposed the setting up of the façade at the entrance to the park, a site which he described as in every way appropriate.

Mr. Alderman Harrop assured the deputation that the Committee's only desire in the matter was to do the best for the citizens, and expressed regret that, seeing that there was such strong opposition, it had

not found vent before matters had reached their present stage.

Mr. Royle replied that as soon as information about the intentions of the Committee was available a public protest was made.

Mr. Alderman Harrop promised that the Committee would reconsider its decision and communicate the result to the members of the deputation.

The Committee later in the afternoon visited Heaton Park and Alexandra Park with the view of arriving at a possible solution of the difficulty.

DETAILS OLD AND NEW—XLI.

Staircase at Redland Court, Bristol.

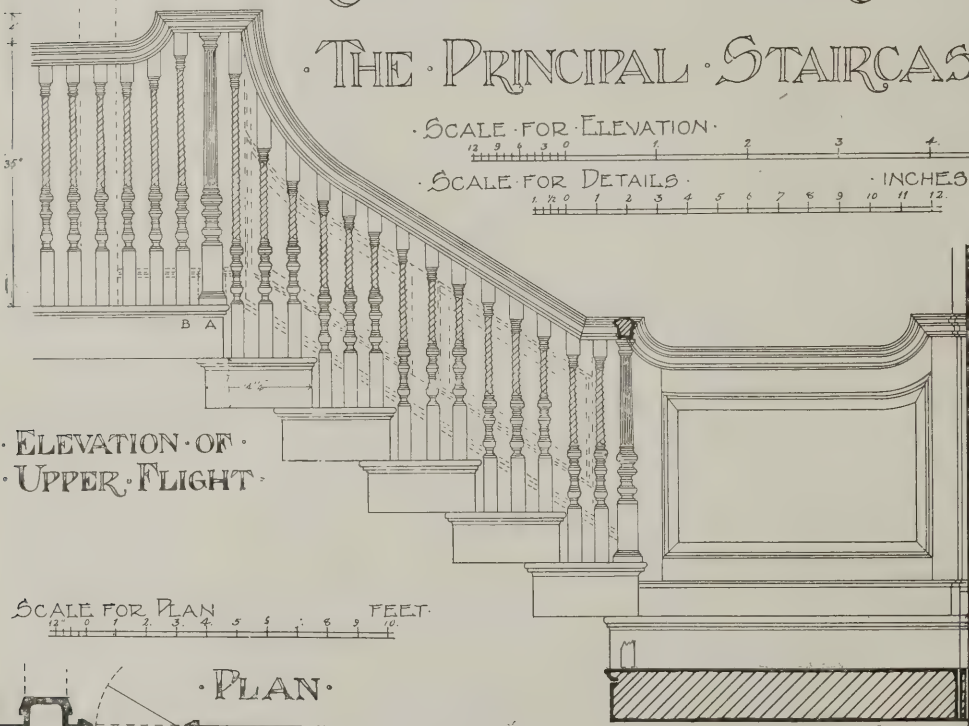
Redland Court was built in 1730 for John Cossins, Esq., a merchant of London. The architect was John Strahan. The house has been in the possession of several families, and is now used as a high school for girls. The staircase is of oak, the balusters being particularly well executed. The alcoves (dotted on plan) have been filled up.

: REDLAND : COURT : BRISTOL :

THE PRINCIPAL STAIRCASE.

SCALE FOR ELEVATION. FEET.

SCALE FOR DETAILS. INCHES.



ELEVATION OF
UPPER FLIGHT.

SCALE FOR PLAN. FEET.

PLAN.

NOSING.

CORRIDOR.

HANDRAIL.

WALL
PANELLING.

BALUSTERS
A AND B.

MEASURED AND DRAWN BY C. D. RUDING BRYAN.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

*Concrete
Institute
Expansion.*

The proposal made last October that the scope of the Concrete Institute should be extended has received the approval of the Council, and a Committee of ten members of Council, under the chairmanship of Mr. E. Fiander Etchells, appointed to consider how the proposal could best be carried out, has issued its report, of which an abstract is appended to the Council's report for 1911-12. The Committee found that the rules of the Institute do not limit its scope to concrete and reinforced concrete, a clause in them enabling the Institute to deal with iron (including steel), bricks, gravel, sand, cements, and other structural materials, and their application. Hence it follows, apparently, that the inclusion of structural engineering is not *ultra vires*. For the purposes of the Institute, structural engineering is defined as "that branch of engineering which deals with the scientific design, the construction, and the erection of structures of all kinds in any material." As if realising that this basis could not well be broader, the Committee immediately define "structures" as "those constructions which are subject principally to the laws of statics, as opposed to those constructions which are subject principally to the laws of dynamics and kinematics, such as engines and machines." The Committee probably know best whether it was wise thus expressly to exclude the engines and machinery which are already, to some extent, and in the future may be more extensively, associated with construction; and, for example, one would like to know whether the definition would shut out from membership the makers of concrete-mixing, hoisting, and pile-driving machinery, and so forth. If engineers of this sort are ineligible for ordinary membership, perhaps they might be admitted as honorary members, since occasionally they might have much to learn and something to teach in the counsels of the Institute.

Other recommendations of the Committee are of subsidiary importance. The enlargement of the scope of the Institute naturally suggested a corresponding modification of the title. It was decided to retain the title, "The Concrete Institute," as it stands, and it was recommended that the development of interest should be signalled by adding to it the words, "An Institution for Structural Engineers, Architects, etc." The sub-title is not strikingly felicitous, either in its inception or in its wording. A sub-title of any kind is usually ineffectual; and in this case there is some suspicion of inconsistency in calling the same thing, in the same breath, an institute and an institution. The engineers seem to prefer "institution," whereas the architects may be supposed to entertain some prejudice in favour of "institute." The form derived directly from the Latin may be as euphonic and as scholarly as that which comes through the French; but although one is as good as the other, it is odd to employ both. Then why run the risk of exciting jealousy by giving precedence to structural engineers over architects? Alpha-

betically, at all events, there would have been sufficient excuse for inverting the order. As it is, the architect (who is peculiarly apt to be supersensitive) may resent the appearance of bringing up the rear. Rather than introduce a sub-title at all, it would perhaps have been better to alter the main title to read, "The Concrete and Steel Institute" (which, however, would almost infringe an existing title) or "The Concrete Construction Institute." These suggestions will perhaps be taken into consideration when the time comes for revising the rules (and perhaps the constitution) of the Institute; for it must be borne in mind that the suggestions of the Committee are at present merely tentative.

Further proposals of the Committee are that an annual course of technical lectures on some branch of structural engineering shall be instituted, and that examinations in the subject shall be held once a year, to test the scientific or technical attainments of applicants for studentship. Thus the Institute would become a teaching as well as an informally educative body, and would thereby enter upon a fresh phase of usefulness, and, while incurring further responsibilities, would set up a new title to respect, and establish a still stronger claim to support. The Institute, in fact, is discovering the lines of utility and interest along which it may develop successfully. By finding itself more technical and educational work to do, it will add greatly not only to the variety and interest of its proceedings, but to its dignity and influence as an institute or institution. If, in the process of development, it appears to cultivate the engineering at the expense of the architectural interest, that is probably the fault of the architect, whose fate with respect to reinforced-concrete construction is in his own hands. As one of many significant evidences of the Institute's ready recognition of the architectural interest, it is pleasant to note that, as the result of a ballot among members of the Council, it was decided to award a bronze medal for the best paper read in the past session to Professor Beresford Pite, F.R.I.B.A., for his striking if somewhat inconclusive essay on "The Æsthetic Treatment of Concrete."

BENDING MOMENTS AND FORMULÆ.

The paper on "The True Bending Moment of Beams with Various Degrees of Fixity," which was read before the Concrete Institute by Mr. Maurice Behar on April 11th, and part of which was published in our issue of April 24th, p. 435, called forth an extended reply from Mr. E. Fiander Etchells, F.Phys.Soc., etc., who, in moving the vote of thanks to the author, said that the adoption of reinforced-concrete work depended upon two factors, first its cost, and secondly its safety, and we should seek a reasonable compromise between these two divergent ideals—i.e., we wanted the greatest stability with the least cost.

He had heard the doctrine that rein-

forced concrete is subject to the laws of a super-statics of a recondite character, and that reinforced concrete construction is one of the occult sciences, whose laws transcend the laws of physics and of ordinary matter. But now that phase was passing away, even among the specialists themselves. The specialists had tried to lift reinforced concrete out of its cradle of empiricism and put it on a more settled basis.

The British specialists had recommended that in all important cases the bending moments under all possible conditions of loading should be accurately determined, and the beams be designed at each point in their length to resist the maximum bending moment which may occur at such point; but for small ordinary floors a sufficiently accurate result would be obtained by using a bending moment of $wl/12$, both over the support and in the centre of the span, for continuous beams.

The second report of the Joint Committee of the Royal Institute of British Architects recommended that the bending moments should be calculated on ordinary statical principles, and the beams or slabs designed and reinforced to resist these moments. Where the maximum bending moments in beams or floor slabs continuous over three or more equal spans, and under uniformly distributed loads, were not determined by exact calculation, the bending moments should not be taken less than $wl/12$ at the centre of the span and $wl/12$ at the intermediate supports.

This raised the question as to what the ordinary statical principles were. Would it be in accordance with the ordinary statical principles if, knowing that there is a bending moment of $wl/12$ at the support, we only provided for $wl/40$ or $wl/24$?

This report speaks of exact calculations, but the most exact calculations we have are based principally on Clapeyron's famous theorem of three moments, which was first published in "Comptes Rendus" about 1857. It is based on several assumptions, one of them being the constancy of the inertia moment. To solve the problem, it is necessary to employ the double integration of a differential equation; and though you work out the numerical result to the furthest decimal, what is the good of the result if there is a basic assumption that is far from the truth?

Speaking of steel-work, where there is admittedly a greater degree of continuity, in general it may be said that the bending moments at the supports next the end are always greatest, and are there about $wl/10$, and near the centre supports they are nearly uniform at about $wl/12$.

Since the draft regulations were written we have from America, the land of up-to-dateness, two further reports, or codes, and they both fully support the draft regulations in respect of the bending moments. The Joint Committee representing the American Society of Civil Engineers, and the principal scientific institutions over there, recommend "That for beams the bending moment at centre and at support for interior spans should be taken at $wl/12$, for both dead and live loads." Then, again, it goes on to say: "For spans of unusual length, more exact calculations should be made. Special consideration is also required in the case of concentrated loads. Even if the centre of the span is designed for a greater bending

moment than is called for by the previous paragraph, the negative moment at the support should not be taken at less than the values there given." Furthermore, it is stated that, "In the design of Tee beams acting as continuous beams, due consideration should be given to the compressive stresses at the support."

The New York Code, which came into force this year, states that "the bending moments at centre and support for beams or girders continuous over two or more supports shall be taken at $wl/12$." The Regulations of the Royal Prussian Ministry say that: "If conditions at support produce restraint and continuity of slabs and beams, the bending moments which appear at those points must have reinforcement placed near the upper stressed surface in proportion to the bearing area."

"If a continuous beam or slab cannot be computed, or, in regard to the latter, if no restraint is certain at a beam or wall, then, with equal panels and uniformly distributed load, the moment is not to be taken less than $wl/8$ over the supports, or than $wl/10$ at the centre of panels."

It has been said that the draft regulations under discussion would prohibit the use of reinforced concrete; that it would kill the trade. In reply, he asked whether the reinforced concrete trade was dead in Germany? Was it dead throughout the United States?

With regard to the breadth of Tee beams, we are also told that the regulations will militate against the use of reinforced concrete, but that does not seem probable when we bear in mind that the particular regulation referred to was suggested by the committee of specialists themselves. They unanimously and on their own initiative recommended that the width of the area under compression in Tee beams should not be greater than fifteen times the thickness of the slab or flange.

The New York Code revised this year states that the breadth of the compression flange of the Tee beam should not exceed twelve times the thickness of the slab plus the breadth of the rib. Therefore it would appear that the regulation under discussion of fifteen times the thickness, as recommended by the specialists themselves, is apparently good practice and also more or less accords with international practice.

Take the ratio of the breadth of the flange to the span of the beam, the regulations of the Royal Prussian Ministry say you shall only take one-sixth of the span as the breadth of the rib. The New York Revised Code gives the same figure. The American Joint Committee are a little more lenient; they say you may take one-fourth of the span.

The L.C.C. regulations allow twice the width of the Prussian, twice the width of the New York, and permit a breadth of one-third of the span. The complaints seemed to arise irrespective of the weight of evidence.

With regard to formulæ generally, it appears to me that formulæ represent the engineer's shorthand, and are a symbolic method of representing the truth; and so long as we do not mistake the symbol for the truth itself all will be well. Formulæ, after all, are merely epigrammatic methods of stating the laws of science.

It has been well said that "in physics the memory disburdens itself of its cumbersome catalogue of particulars and carries centuries of observation in a single formula."

The regulations are given in words or in formulæ, whichever are the most convenient.

Equations are vitally necessary, and they are necessary to ensure that the stresses are within the limits set by the regulations. Everyone has known that many times people have made the assertion that the stresses were under 600 lbs. per square inch after having made their own assumption about the bending moment. You know you have only to make the denominator in the bending moment equation what you like and you will get your stresses low enough to comply with any regulations.

Mr. Behar stated that he was of opinion that regulations framed for the purpose of becoming official and legal should not impose formulæ, but only principles, enabling formulæ to be established; or, in any case, if formulæ are given, he was of opinion that these should be given as examples of what would be required, but that these particular formulæ alone should not actually be imposed.

Mr. Etchells suggested that if principles only were given, very few architects, surveyors, magistrates, or builders would be able truly to affirm whether the statical requirements of the regulations had been complied with. If merely principles were laid down, we should require to be Rankines, Clapeyrons, and Eulers as well, to convert the basic principles into a form that would be suited for the practical work of design. Basic principles might please the professor of engineering, but would they help the busy builder who had to put up buildings in a hurry?

Mr. Behar stated that he was of opinion that an engineer or architect who may be called upon to apply regulations concerning reinforced concrete should have a sufficient knowledge of the laws of mechanics to be able to deal with the various problems which he may have to study, and to oblige him to follow certain formulæ would practically imply that he was incapable of exercising proper control of any scheme or problem in reinforced concrete which he may have to consider.

Mr. Etchells held that such a conclusion was unjustified. The architects and engineers were consulted before any regulations were sent forward to the allowing authority. Then, since the architects and engineers were consulted before the regulations were made, such consultation effectively admits their competency, not only to carry out the works, but to criticise the draft and to participate in the work of law-making.

He maintained also that it would be easier to see whether a particular design complied with certain stresses than it would be for the building authority, or any officers of the building authority, to discriminate as to who were competent, and who were not. That would be a very arduous task, and a very difficult task, and one open to very grave abuses, and it is much easier to judge a plan than to judge a man.

Valparaiso Harbour Contract.

Messrs. S. Pearson and Son, Ltd., have secured the contract for the new port of Valparaiso. The amount of the contract is £2,600,000, and the time allowed for the construction of the port is seven years. The work will involve: Dredging in sea bottom—677,700 cubic yards. Filling for reclaimed areas—2,752,400 cubic yards. Granite rubble for breakwaters and foundations for quay walls—1,604,600 cubic yards. Concrete in breakwaters, quay walls, etc.—425,640 cubic yards. Iron and steelwork—13,600 tons. Railway and crane tracks—14½ miles.

PATCHING AND REPAIRING CONCRETE.

SOME INTERESTING EXPERIMENTS.

An investigation of current practice in patching and repairing plain and reinforced concrete to determine the most satisfactory methods has been made during the past year by the committee on masonry of the American Railway Engineering Association, and the results are summarised in its report.

Wet Method.—The surface of the old concrete is thoroughly roughened, cleaned, and drenched with water and covered with a cement grout. Then the new concrete is mixed to a sloppy consistency and applied, being held in place until set by forms. Many successes and many failures have followed this method. Where it has been successful the result probably has been due to painstaking care and expense in the preliminary cleaning, and thorough wetting of the old concrete surfaces before the new concrete is applied.

Moderately Dry Method.—The surface of the old concrete is thoroughly roughened, cleaned, and drenched with water, and powdered with cement or painted with cement grout, after which the new concrete is applied and thoroughly tamped against the old surface. Generally, such patches are kept moist by sprinkling with water for several days. The same comment is made on this method as on the wet method.

Dowel Method.—This is a modification of the two preceding, and is generally used for other than horizontal surfaces, although it may be applied to the latter. The new concrete may have any consistency to meet the particular conditions or the ideas of the engineer, but usually a fairly wet concrete is used. The method includes drilling holes and setting dowels into the old concrete, with projecting ends to engage the new concrete. Sometimes steel bars or metal fabric are connected to the dowels to insure permanency of the patch. The committee observes that this method can be made uniformly successful, but cannot always be applied. Where any considerable mass of new concrete is to be connected to old concrete, it is believed to be the only safe method.

Wedge Method.—This includes the cutting out of defective concrete in such a manner as to undercut the surrounding good concrete, so that the new concrete will be held in place by the shape of the binding edges. The difficulty of undercutting concrete so as to secure such edges is pointed out to be too great to make this method applicable in ordinary cases, and, except where a considerable depth of new concrete is to be put in, such undercutting could not be successfully done.

Cleaning with Steam.—The surface of the old concrete is brushed as clean as possible with stiff brushes, and then gone over at least twice with a steam jet. A piece of ½-in. gas-pipe is stated to make a satisfactory nozzle. This pipe is connected to a steam hose so that it can be readily moved about. The steam is supplied by the boilers of the mixer or hoisting engines. The steam will clean and heat the concrete surface, leaving it perfectly dry, so it is important to drench the surface thoroughly with water after cleaning with steam. In cold weather it is found advantageous to use hot water. Immediately after the surface is cleaned and drenched, the new concrete is applied. Excellent results have followed the use of this method, but it is essential that the surface of the old con-

crete be drenched with water after using the steam jet.

Cleaning with Acid.—This includes washing the old concrete with a solution of hydrochloric acid, one part acid to two parts water, after which the surface must be carefully washed to remove free acid. This is very commonly applied in cleaning old concrete preparatory to placing new concrete against it, and is considered by many the only safe one to use, especially where a finish coat is to be put on.

From a study of the material collected, the committee has prepared conclusions which are in substance as follow:

In all cases the surface to be repaired must be thoroughly cleaned of all loose material, etc., and the clean, rough, sound concrete exposed to receive the patch. Probably the best method of cleaning is by means of a steam jet. The surface to be repaired must then be so thoroughly drenched that the old concrete will not absorb water from the new mortar or concrete used in patching. If possible, the surface should be kept covered with water for several hours.

If the repair is to be made on a vertical or sloping surface, and is not to be more than $1\frac{1}{2}$ in. thick, the surface of the old concrete should be spattered with a cement grout, while it is still wet, following this immediately with a fairly stiff plaster coat of mortar made of the same proportions of cement and sand as used in the original concrete, but never richer than 1:2 $\frac{1}{2}$. This coat should not be thicker than $\frac{1}{2}$ in., and each coat should be forced into the surface, but not dragged with a trowel. The surface of each coat, except the final, should be scratched to give a bond for the next. This plastering should preferably begin at the top and proceed downward, and only enough time should be allowed to permit each coat to receive its initial set before the next is applied. The final coat should be finished with a wooden float, and only enough water should be used to finish the surface properly. The patch should be kept damp and protected from sun or frost till fully set.

If the repair or finish coat is to be made on a horizontal or nearly horizontal surface, the old concrete should be slushed and broomed with a thin grout, following this immediately with a wet 1:2 $\frac{1}{2}$ mortar, using sand or granite screenings, and of the full thickness required, but not less than $\frac{1}{2}$ in. When the mortar begins to take its initial set, it should be floated or trowelled to a finish.

If the repair is to be made on a vertical or sloping face, and is to be more than $1\frac{1}{2}$ in. thick, it is advisable to embed dowels into the old concrete, as deeply as the thickness of the proposed patch and spaced sufficiently close to anchor the patch firmly to the old concrete. The dowels must be wedged into the old concrete, and it is advisable to fasten wires, metal fabric, or bars to them, in the case of extensive patching, as a safeguard. The patching may then be done with mortar without forms, or with wet concrete supported by forms, depending upon the thickness and the extent of the patch.

If the repair is to be made on a horizontal or nearly horizontal face, and is of considerable thickness, dowels may be used, or the concrete may be reinforced by fabric or bars without using dowels, treating the patch as a block of masonry.

Care must be taken not to have thin edges on patches. To avoid this, it may be necessary to cut out sound concrete around a place to be patched, so as to give deep edges to the patch. If possible, the edges should be undercut.

CALCULATING THE STRENGTH OF STEEL PILLARS.

BY W. CYRIL COCKING.

The author offers an approximate method of calculating the strength of steel pillars, using constants based upon the London Building Acts, 1909, Amendment.

THE formulæ for steel pillars included in the London Building Act, 1909, Amendment, having rendered necessary the revision of most tables of strengths of pillars, in order that they may comply with the above-mentioned Act, the following methods are suggested; and although it cannot be claimed that they give entirely accurate results, the time and labour saved in calculation will more than compensate for the slight error incurred.

The omission of the radius of gyration in these formulæ renders it unnecessary to calculate the moment of inertia, which up to the present has been indispensable in calculating the strengths of struts.

It will also be noted that the weight per foot run of cross-section is used in preference to the area of cross-section, which it is hoped will facilitate the calculations in estimating.

A steel merchant's stock list of sections giving weights per foot run in lbs. and over-all dimensions in inches will provide all the information required.

List of Symbols Used in Calculations.

- A = Area of cross section of pillar in square inches.
- C = Constant depending on the shape of cross section.
- D = Dimension in inches of cross section qualified by constant "C."
- E = Eccentricity Factor.
- F = Constant depending on fixture of ends of pillar.
- L = Safe load in tons.
- M = Factor which multiplied by "D" will give maximum length of pillar with fixed ends.
For one end fixed and other end pin-jointed take $\frac{5}{8}M$.
For both ends pin-jointed take $\frac{5}{8}M$.
- W = Weight in lbs. per foot run of cross section. Equal to $3\cdot4$ A.
- x = Eccentricity of load in inches.
- L_E = Equivalent Centric load due to eccentricity of loading, equal to $L(1 + Ex)$.
- H = Height of pillar in feet.
- D_{MAX} = Depth over section perpendicular to neutral axis.

Formulae:

$$(1) L = W \left(F - \frac{CH}{D} \right)$$

$$(2) W = \frac{L}{\left(F - \frac{CH}{D} \right)}$$

Values of F.

- (A) For both ends fixed = 1·91.
 - (B) For one end fixed and other end pin-jointed = 1·62.
 - (C) For both ends pin-jointed = 1·32.
- By using formula (2) a considerable amount of time can be saved in arriving at the approximate weight per foot run of strut or pillar.

For example, take case 16 (see diagram on next page).

We have a load of 511 tons to carry on a length H of 30' - 0". We will assume that triple joists will be employed and that the plates are 20" wide. The centres

of joists should be equal to about $20' \div 3$, say 6 $\frac{2}{3}$ ".

Then by inserting these values with the constants for case 16 in formula (2) we have that

$$W = \frac{511 \text{ tons}}{\left(1\cdot91 - \frac{1\cdot03 \times 30'}{6\frac{2}{3}"} \right)} = 356 \text{ lbs. nett wt. per foot run.}$$

By adding say 10 lbs. for rivet-heads, the gross weight per foot run of section should be about 366 lbs.

This is all we require for estimating. Now, when we require to detail the stanchion, we can find several sections which will fulfil the assumptions we have made, and will also have a nett weight of about 356 lbs.

- (a) 3 I_s. 16" × 6" and 20" × 2 $\frac{1}{2}$ " in plates = 18 $\frac{1}{2}$ " × 20" @ 356 lbs.
- (b) 3 I_s. 15" × 6" and 20" × 2 $\frac{3}{4}$ " in plates = 17 $\frac{3}{4}$ " × 20" @ 364 lbs.
- (c) 3 I_s. 14" × 6" @ 57 lbs. and 20" × 2 $\frac{3}{4}$ " in plates = 16 $\frac{3}{4}$ " × 20" @ 358 lbs.
- (d) 3 I_s. 14" × 6" @ 46 lbs. and 20" × 3 $\frac{1}{4}$ " in plates = 17 $\frac{1}{4}$ " × 20" @ 359 lbs.
- (e) 3 I_s. 12" × 6" @ 54 lbs. and 20" × 3" in plates = 15" × 20" @ 366 lbs.
- (f) 3 I_s. 12" × 6" @ 44 lbs. and 20" × 3 $\frac{1}{4}$ " in plates = 15 $\frac{1}{4}$ " × 20" @ 353 lbs.

This example has an error of 3 lbs. on the wrong side, which represents about ·85 per cent. or 4·35 tons on the load of 511 tons, which is negligible.

- (g) 3 I_s. 10" × 6" @ 42 lbs. and 20" × 3 $\frac{1}{2}$ " in plates = 13 $\frac{1}{2}$ " × 20" @ 364 lbs.
- Checking the ratio of centres of joists to depth over plates, we have D_{max} = $\cdot48 \times 13\frac{1}{2}" = 6\cdot48"$ against the 6 $\frac{2}{3}"$ we had assumed.

This stanchion will practically have the same strength taken about either axis.

We have therefore seven different sections, varying in weight from 353 to 366 lbs. per foot run, which will fairly accurately comply with all our assumptions.

It will be seen that there is no "trial and error" to obtain a suitable section (except in cases 12 and 22) with its consequent waste of time, but that a section is immediately arrived at.

It is not advisable that these formulæ should be used by students or those who do not possess some practical knowledge in the design of structural steelwork, etc., because these formulæ do not give any clue to the accepted theories for the design of stanchions; and also the choice of the most economical section to be employed to carry any given load depends on the position of the stanchion or strut in relation to the whole structure, the maximum external dimensions that can be allowed, the conditions of fixture at the ends, the proper proportions of the various parts of a cross-section (such as the thickness of webs and the projection of flange plates beyond flanges, etc., etc.), and the distribution of the area of cross section, a combination of conditions which only a good working experience can satisfactorily provide.

THE CONCRETE INSTITUTE.

Annual Dinner.

The second annual dinner of the Concrete Institute took place on May 9th, in the Empire Hall at the Trocadero Restaurant, Piccadilly Circus, W., Mr. E. P. Wells, J.P., president, in the chair. Among those present were the following: Mr. W. E. Riley, F.R.I.B.A., M.Inst.C.E., Superintending Architect of Metropolitan Buildings and Architect of the London County Council; Mr. R. Elliott-Cooper, M.Inst.C.E., President-elect Institution of Civil Engineers, chairman of sectional committee on bridges and general building construction of the Engineering Standards Committee; Mr. H. Percy Boulnois, M.Inst.C.E., Vice-President Concrete Institute, chairman of council of the Royal Sanitary Institute; Mr. E. A. Stickland, President of the Institution of Municipal Engineers, Borough Surveyor, Windsor; Mr. John Murray, F.R.I.B.A., Crown Surveyor; Sir W. Alfred Gelder, M.P., F.R.I.B.A.; Sir Henry Tanner, C.B., I.S.O., F.R.I.B.A., Past President of the Concrete Institute, Principal Architect to H.M. Office of Works; Mr. W. J. Downer, I.S.O., J.P., Assistant Inspector of H.M. Office of Works; Lieut.-Colonel G. E. Holman; Mr. F. E. Wentworth Shields, M.Inst.C.E., Vice-President Concrete Institute, Dock Engineer of the London and South-Western Railway; Captain A. Boyd Carpenter, ex-Mayor of Harrogate; Professor J. H. Cormack, B.Sc., Assoc. M.Inst.C.E., Professor of Mechanical

Engineering, University College, London; Mr. H. H. Dalrymple Hay, M.Inst.C.E., chief construction engineer, Underground Railways, London; Mr. C. R. S. Kirkpatrick, M.Inst.C.E., chief assistant engineer, Port of London.

In proposing the toast of "The Concrete Institute," Mr. W. E. Riley said he congratulated the Institute upon the great success which had been achieved already. Pioneer work was generally a very thankless task. He suggested that those who had inaugurated the Institute had very far-reaching thought; because, whether we liked it or not, concrete and reinforced concrete generally had come to stay. Those who had been through an architectural training understood the difficulties involved; but he believed that the man who is going to make a mark in life is the man who would show adaptability and commercial interest. He had heard men say they were sorry that someone had discovered that putting steel down concrete made it strong; the commercial world was not sorry for that—it was going to be glad. The aims of concrete experts had been greatly aided by three or four changes in the law which, though based on rigid principles, would be found to be more elastic in application than might be thought, and encouraged the application of new materials. He had recently been at the Architectural Congress at Rome, where he was glad to find that a good deal of time and consideration were given to the question of the design of reinforced concrete, though the conclusion there was that no one knew how to treat it. Some thought it thin and expressionless, etc.

But the right thing would evolve. He thought the aims of the Concrete Institute would result in obtaining proper and artistic expression by those who were trying to interpret building materials. He felt somewhat diffident in speaking to an Institute like this about regulations; but the onerous duty had been thrown upon him of trying to do something to put the regulations upon a proper footing. Nothing could be absolutely ideal, but the regulations should be made as ideal as could be. Any amount of personal effort had been expended on the endeavours to make them so. Those in authority at the London County Council had gone to every possible source of information that could be ascertained, and the regulations in force in other countries had been analysed and codified. The L.C.C. authorities were deeply grateful for the enormous assistance which they had had from this Institute. He was glad to have this opportunity of thanking the Institute for the great help they had given him personally in endeavouring to make those regulations such that they would be workable and practicable. Of course, he was not going to say anything more about the regulations, because they were at the moment *sub judice*, but he hoped that they would soon appear. He could not help adding this about the long-looked-for regulations—that they aim at trying to help all thoroughly, and to do what was wanted, namely, to give a fillip to the industry, and to give the benefit of much thought and experience to those who were willing and anxious to give commercial development to concrete work.

VALUES OF CONSTANTS

EXAMPLES


























AXIS	CASE	SHAPE OF SECTION	FIGURE	VALUE OF D	C.	M	E	SECTION	H	L.C.C. METHOD	AUTHOR'S METHOD	REMARKS
YY	1	JOIST.		Breadth of Flange	.4	2.93	$\frac{10.32}{D}$	10"x6" B.S.B @ 42 lbs	14'	42.1	41.03	
XX	2	JOIST.		Depth of Joist	.22	5.33	$\frac{3.13}{D}$	DITTO	14'	67.75	67.38	
YY	3	CHANNEL		Breadth of Flange	.31	3.84		8"x3 1/2" B.S.C @ 22.72 lbs	11'	22.1	21.2	
XX	4	CHANNEL		Depth of Channel	.232	5.07	$\frac{3.47}{D}$	DITTO	11'	36.35	36.1	
YY	5	EQUAL SIDED ANGLES		Breadth of one Flange	.455	2.6		3"x3 1/2" @ 9.36 lbs.	5'	10.75	10.75	
YY	6	UNEQUAL DITTO.		Breadth of shorter Flange	.416	2.83		5"x3 1/2" @ 9.72 lbs	6'	10.66	10.47	
YY	7	EQUAL FLANGED TEES		Breadth of Flange or Leg	.425	2.757		4"x4 1/2" @ 12.78 lbs	8'	13.56	13.55	
YY	8	ZED.		Sum of Flanges.	.76	1.547		7"x3 1/2"x3 1/2" @ 20.22 lbs	7'	23.8	23.25	
YY	9	SOLID STEEL COLUMN		Diameter of Column	.353	3.33	$\frac{8.0}{D}$	6" DIA. @ 96.13 lbs	17'	87.7	87.5	
YY	10	BRACED JOISTS		Centres of Webs of Joists.	.167	7.04	$\frac{1.77D_{max}}{D}$	2/10"x6" 1" @ 84 lbs JOISTS 7" CENTRES.	16'	129.1	128.2	When centre of Joists is more than .76 times depth of Joists use (Case 11).
XX	11	BRACED JOISTS		Depth of Joists.	.22	5.33	$\frac{3.13}{D}$	DITTO	16'	131.6	131.0	
YY	12	SINGLE JOIST PLATED		Breadth of Plate plus added thickness of Plates.	.441	2.67	$\frac{12.5D_{max}}{D}$	1/9"x7" 1" @ 58 lbs	27'	97.5	92.7	
XX	13	DITTO		Depth over Plates	.21	5.6	$\frac{2.85}{D}$	WITH 4/5"x5/8" FLATS @ 61.2 lbs	27'	163.3	166.0	
YY	14	DOUBLE JOISTS PLATED		Centres of Webs of Joists	.162	7.253	$\frac{1.69D_{max}}{D}$	3/16"x6" 1" @ 46 lbs WITH 1/16"x5/8" FLATS @ 108.8 lbs	26'	283.5	283.	When centre of Joists is more than .755 times depth over plates use (Case 15).
XX	15	DITTO		Depth over Plates	.215	5.47	$\frac{2.97}{D}$	JOISTS 8 1/2" CENTRES	26'	315.	313.2	
YY	16	TRIPLE JOISTS PLATED		Centres of Webs of Joists	.103	13.7	$\frac{6.85D_{max}}{D}$	3/16"x6" 1" @ 62 lbs WITH 1/20"x3/8" FLATS @ 170 lbs	30'	513.	511.	When centre of Joists is more than .48 times depth over plates use (Case 17).
XX	17	DITTO		Depth over Plates	.215	5.47	$\frac{2.97}{D}$	JOISTS 6 1/2" CENTRES	30'	553.	556.	
YY	18	BRACED CHANNELS		Distance between webs plus .6 times Flange of channel.	.176	6.67	$\frac{2.0D_{max}}{D}$	3/10"x3 1/2" B.S.C @ 28.21 lbs	20'	76.75	77.5	When D is more than .76 times depth of channels use (Case 19).
XX	19	DITTO.		Depth of channels.	.232	5.07	$\frac{3.47}{D}$	DISTANCE BETWEEN WEBS TO BE 4 1/2"	20'	81.6	81.6	
YY	20	TWO CHANNELS PLATED		Breadth of plate less 1"	.284	4.2	$\frac{5.04D_{max}}{D}$	2/12"x3 1/2" B.S.C. @ 26.1 lbs each	18'	152.5	152.1	When D is more than 1.3 times depth over plates use (Case 21).
YY	20	DITTO		Ditto	.285	4.13	$\frac{5.07D_{max}}{D}$	WITH 3/16"x1/2" FLATS @ 47.6 lbs	18'	151.4	151.4	When D is more than 1.32 times depth over plates use (Case 21).
XX	21	DITTO		Depth over plates.	.215	5.47	$\frac{2.97}{D}$		18'	161.5	161.0	
YY	22	ONE CHANNEL PLATED		Breadth of plate plus thickness of plate on one flange.	.335	3.507		8"x3 1/2" B.S.C @ 22.72 lbs	20'	58.8	60.5	Breadth of plates not to exceed
XX	23	DITTO.		Depth over plates	.215	5.47	$\frac{2.97}{D}$	WITH 4/16"x1/2" FLATS @ 40.8 lbs	20'	94.0	94.0	Twice the breadth of flange of channel
YY	24	TWO EQUAL ANGLES		Breadth of Flange of one angle.	.292	4.04		3/4"x4 1/2" @ 25.5 lbs	14'	22.75	22.7	
YY	25	TWO UNEQUAL ANGLES		Breadth of shorter flange of one angle	.212	5.573		2/6"x3 1/2" @ 28.92 lbs	14'	26.0	28.1	
YY	26	FOUR ANGLES		Breadth of longer flange of one angle	.18	6.53		4/5"x3 1/2" @ 51 lbs	18'	69.0	68.8	
YY	27	TWO EQUAL ANGLES		Breadth of flange of one angle	.196	6.0		2/5"x5 1/2" @ 32.3 lbs	14'	44.0	43.9	
YY	28	FOUR EQUAL ANGLES		Ditto	.212	5.56		4/5"x5 1/2" @ 64.6 lbs	14'	85.0	85.0	

TABLE FOR CALCULATING THE STRENGTH OF STEEL PILLARS (see p. 535).

Mr. E. P. Wells, J.P., President of the Concrete Institute, said that in thanking Mr. Riley for the kind words he had said on behalf of the Institute, he also thanked him for the extremely impartial attitude that he had taken all through the negotiations that had passed between Mr. Riley and the Concrete Institute in regard to the new regulations about to be laid down for reinforced concrete. He trusted that the negotiations which were about to be carried on by the Local Government Board would be conducted in the same spirit as existed between the Concrete Institute and Mr. Riley. One thought struck him in connection with the Titanic disaster, and that was if London was frozen up and half the mains were frozen, any large conflagration would result in one of the most appalling disasters that had ever taken place. The regulations put forward by the London County Council had for their primary object the protection of life and property. Personally he would uphold those regulations throughout, because he felt convinced that though possibly they might at first appear a little hard, still they were for the benefit of London as a whole. If buildings could be put up which could be made absolutely fireproof, though this provision might be more costly at the outset, it would be cheapest in the long run, and therefore he was of opinion, from what he had seen and what he had had to do with the Building Acts, that they might be made more strenuous than at the present time. He hoped that, if anything was done in the future for their amendment, certain clauses would be added so as to place everything in such a condition that, given a building in accordance with the regulations, there would be perfect certainty that, in case of fire, very little damage would be done outside the building where the fire originated. There might be one or two present who thought that the regulations were a little hard, but he thought that when the Act was thoroughly gone into and applied it would be found that they would be beneficial all round. Next session the Council of the Concrete Institute were going to inaugurate educational lectures, primarily for the benefit of the younger men; but he trusted that they would be attended also by some of the older men, so as to give every help to the lecturer. He was happy to say that the total number of members was 920, and he hoped that before the present year was out the number would be 1,000, and that within the following year or so it might increase to 2,000.

Mr. F. E. Wentworth Shields, Vice-President Concrete Institute, in proposing "The Visitors," said that so large a membership for so young an institute was extremely gratifying. Moreover, it might be justly claimed, and they were able to say, that the work which they had already done had been useful not only to structural engineers, but to the world at large, and particularly to the citizens of London. They were able to say they had formed rules by which the regulations and the drawing of reinforced concrete designs would in future be simplified. They were able also to say with satisfaction that Parliament had entrusted them with the work of offering criticism and suggestions as to the rules which the London County Council had drawn up for the guidance of builders in reinforced concrete. Turning to the subject of this toast, he said that there were so many distinguished guests that it would take too long to mention them by name.

Lieut.-Colonel Holman responded.

Sir Henry Tanner, F.R.I.B.A., proposed the toast of the President, Mr. E. P.

Wells, which was drunk with musical honours, and Mr. Wells briefly responded.

Annual General Meeting.

In the afternoon of the same day the annual general meeting of the Concrete Institute took place in the Institute's lecture hall at Denison House, 296, Vauxhall Bridge Road, Westminster. Sir Henry Tanner, C.B., I.S.O., F.R.I.B.A., presiding. The following were elected members of the Institute: C. W. Ballenden, engineer on South African Railways; S. Edwards, architect and quantity surveyor, Barnstaple; C. T. Lewis, structural engineer, Ilford; H. Lingard, engineer on Madras and Southern Mahrattan Railway; J. P. Pike, Assoc. R. San. I., M. Inst. San. E., Southend; A. R. Sage, assistant principal of London County Council School of Building, Brixton, S.W.; I. M. Sutherland, structural engineer, Victoria, Australia; Allan Graham, A.R.I.B.A., architect and surveyor, London, W.

The annual report of the Council was adopted unanimously. The following extracts from it will be found of use and interest. The report states that:

The Concrete Institute had on April 30th, 1912, 881 Members, 24 Students, and 11 Special Subscribers.

The Council has in the past year been concerned with numerous technical and administrative matters.

One of the principal items occupying the attention of the Council and a Joint Committee of the Science and Reinforced Practice Standing Committees has been the consideration of the proposed Regulations made under the provisions of Section 23 of the London County Council (General Powers) Act, 1909, with respect to the construction of buildings wholly or partly of reinforced concrete. A draft of suggested Regulations was submitted by the Superintending Architect of the London County Council to the Institute for its consideration, and the action taken was recorded in the Annual Report for the 1910-11 Session. The 1909 Act referred to provides that the Concrete Institute, together with the Institution of Civil Engineers, the Royal Institute of British Architects, and the Surveyors' Institution, shall have notice of the Council's intention to apply to the Local Government Board for the allowance of any regulations as to the use of reinforced concrete in the county of London, and such notice was duly given at the beginning of December, 1911. The Institute's suggestions as to the amendment of these regulations have been sent to the Secretary of the Local Government Board and to the Superintending Architect of the London County Council, and in due course the Council of the Concrete Institute will be able to inform the members as to the outcome of such action.

In October, 1911, a proposal for widening the scope of the Institute was considered by the Council and referred to a Committee, whose report was approved on March 14th, 1912. The members of the Committee are: Mr. E. F. Etchells (chairman), Professor Henry Adams, Mr. Alexander Drew, Mr. Charles F. Marsh, Mr. W. G. Perkins, Mr. Edwin O. Sachs, Mr. H. D. Searles-Wood, Mr. L. Serrallier, Sir Henry Tanner, and Mr. E. P. Wells.

A seal, medal die, and certificate of membership have been designed and engraved for the Institute by Mr. Cecil Thomas.

The question of awarding a bronze medal for the best paper read in the previous session was decided by ballot among the members of Council, and as a result the medal has been awarded to Pro-

fessor Beresford Pite, F.R.I.B.A., for his paper entitled "The Aesthetic Treatment of Concrete."

As regards the work of the Science Standing Committee, the Institution of Municipal and County Engineers requested the opinion of the Concrete Institute upon a Standard Specification for Concrete Flags which they proposed issuing, and the Committee made a number of suggestions which the Institution has intimated will be considered in any revision they may make in the future of their Specification. The Standard Notation for calculations for reinforced concrete which was drafted by the Science Committee and approved by the Council continues to meet with favour, and has been adopted by the Joint Committee on Reinforced Concrete appointed by the Royal Institute of British Architects in their Second Report, and by the London County Council in their proposed regulations covering the erection of buildings of reinforced concrete in London. Authors of text-books have also employed it, and the American Joint Committee on Concrete and Reinforced Concrete have informed the Science Committee that they have the Notation under consideration with a view to its adoption in any further Report they may make. The Committee have the following matters under consideration: (1) Reinforced-concrete piles. (2) A chemical test for steel used in reinforced concrete. (3) The standardisation of attachments or joints in reinforced concrete. (4) The adhesion of or friction between concrete and steel. (5) A standard notation for calculations in structural engineering generally. (6) A standard specification for reinforced concrete work. (7) The effect of sewage on concrete. (8) The effect of oils and fats on concrete.

The Science Committee have appointed four representatives of the Institute upon the Joint Committee on Loads on Highway Bridges which is conducted by the Concrete Institute. The Joint Committee has had one meeting, and has issued enquiry forms to municipal authorities and others soliciting information respecting the vehicles that have to be sustained in various parts of the country as a preliminary to drafting recommendations.

The Tests Standing Committee have issued reports on "The Testing of Concrete, Reinforced Concrete, and Materials Employed Therein" and "The Testing of Reinforced Concrete Structures on Completion." These have been discussed at ordinary general meetings of the Institute. The Committee have the following matters under consideration: (1) The effect upon steel of the presence of sulphur in aggregates. (2) The grading of aggregates. (3) The expansion and deterioration of concrete due to changes of atmospheric temperature. (4) The effect of the use of sodium silicate on the surface of concrete as affecting reinforcing metal. (5) The erratic results obtained by the Vicat needle in ascertaining the initial set of cement.

The Reinforced Concrete Practice Standing Committee have drafted reports on the subject of "The Standardisation of Drawings for Reinforced Concrete Work" and "The Consistency of Concrete," which have been discussed at ordinary general meetings of the Institute. The Committee have also had under consideration a reference of the Council for a report as to clauses in contracts for reinforced concrete work, but the Committee recommended the Council that they were of the opinion that the formulation of clauses in contracts was a legal matter, and the Committee did not feel they were capable of formulating such clauses. The Committee are still investigating: (1)

Methods of treating the surface of concrete. (2) Cracks due to the expansion and contraction of reinforced concrete.

The chairman then read the report of the scrutineers on the annual election of members of Council. This resulted as follows: Mr. H. K. G. Bamber, F.C.S., F.Soc. Chemical Industry; Mr. H. Percy Boulnois, M.Inst.C.E., F.R.San.I., F.I. San.E., P.P.Inst. Mun. and County Engineers; Mr. Alexander Drew, M.I.Mech. E.M.Inst. Engineers and Shipbuilders in Scotland, Mem. Soc. Arts; Mr. Matt. Garbutt, F.R.I.B.A., Assoc.M.Inst.C.E.; Major R. Napier Harvey, Royal Engineers; Mr. John Munro; Mr. A. Alban H. Scott, M.S.A., F.Inst. San. Engineers; Mr. H. D. Searles-Wood, F.R.I.B.A., F.R.San.I.; Mr. L. Serrailier, Mem. Perm. Inst. Assn. Navigation Congresses, Mem. Perm. Inst. Assn. Road Congresses; Mr. T. B. Shore; Mr. R. W. Vawdrey, B.A.(Cantab.), Assoc.M.Inst. C.E. The above form only a portion of the Council of the Institute, the total

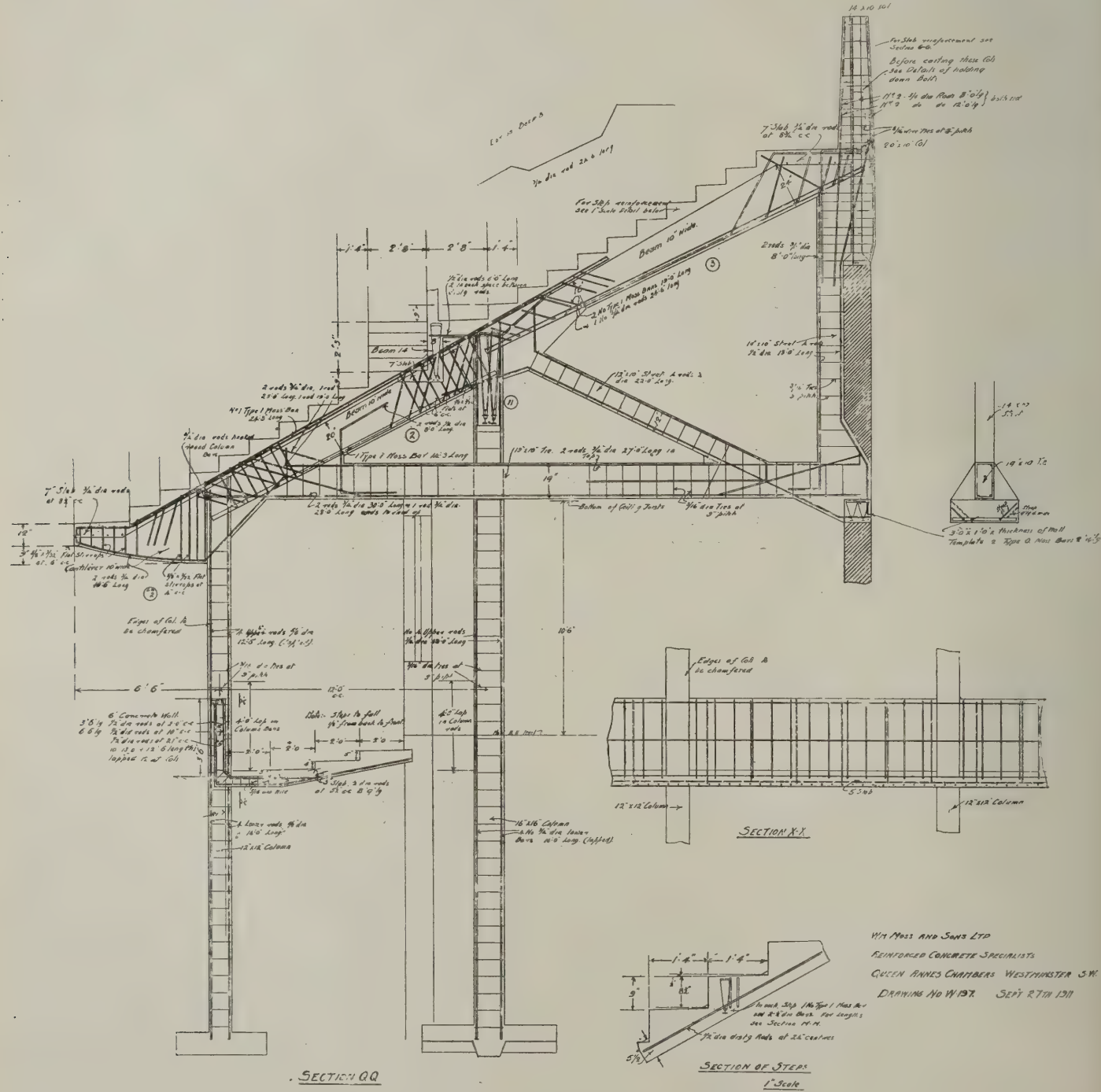
number of which is 32, only a small number being due to retire each year.

The auditors of the accounts were appointed, and the chairman then presented the medal which is to be awarded annually for the best paper read in each session. This is the first occasion on which the medal has been awarded, and it was presented to Professor Pite, F.R.I.B.A., for his paper entitled "The Æsthetic Treatment of Concrete," which was read in the 1910-11 session. Sir Henry Tanner, in presenting the medal, said that Professor Pite's paper was a most interesting contribution to the literature of the subject treated, and it gave rise to some little discussion.

Professor Pite, in reply, said that his paper had dealt with an aspect of work in concrete that had not yet captured the imagination of members of the Concrete Institute. He hoped it would in the future, as one could not but be sure that if the apparent fog that hung over progress in the architectural aspects of concrete con-

struction were dispelled by a little clear light there ought to be a considerable acquisition of width and breadth to the operations of this Institute. So long as that subject remained unexplored the Institute would be looked upon as merely a body concerned with certain aspects of building only; and concrete construction would be relegated to the larger, coarser, and greater class of building, when it might, if there were interest and enthusiasm and hope and light, be used for more monumental, more decorative, and more homely, and therefore much wider purpose.

It seemed to him that since it was recognised that there was a field for experiment, for movement, for intellectual thought—a field which connected a decent contract in concrete with an ordinary and regular course of architectural study—then there would be the widened scope which their Special Committee so hoped for, and which they had in a way suggested by adding the word "Architects" to the



REINFORCED CONCRETE RACECOURSE STAND, WARWICK.



REINFORCED CONCRETE RACECOURSE STAND, WARWICK.

title of the Institute. He suggested that the Concrete Institute should hold an annual competition in reinforced concrete design.

The chairman, as retiring president, then installed Mr. E. P. Wells, J.P., as president of the Concrete Institute for the ensuing two years of office.

Mr. A. Alban H. Scott, M.S.A., M.C.I., in moving a vote of thanks to Sir Henry Tanner, said that he had given an immense amount of time to the affairs of the Institute, and the courtesy which he had shown to everyone could never be exceeded.

REINFORCED CONCRETE RACECOURSE STAND, WARWICK.

We publish in this issue illustrations of the New County and Tattersall's stand which has just been erected at Warwick Racecourse. The new structure is carried out wholly in reinforced concrete. A noticeable feature of the design is the pierced concrete parapet which divides the upper and lower steps of the stand. The appearance of steepness is thus avoided, while the architectural effect obtained is considerably assisted by the double flights of steps placed symmetrically on either side of the centre line, as shown in the accompanying photographic illustrations.

The new stand has been erected as a self-supporting structure over an existing building. It is carried by reinforced concrete stanchions and beams, as illustrated by the cross section, thus enabling the old building to be retained.

The stand was designed and carried out by Messrs. William Moss and Sons, Ltd., of Queen Anne's Chambers, Westminster, S.W., to the instructions of the late Mr. A. E. King, architect. It was favourably commented upon, from the racing point of view, by the "Evening News" expert on the occasion of the recent Warwick races; and from the architectural standpoint it may be regarded as an admirable design in reinforced concrete.

A ROOF SHIELD IN REINFORCED CONCRETE TUNNEL CONSTRUCTION.

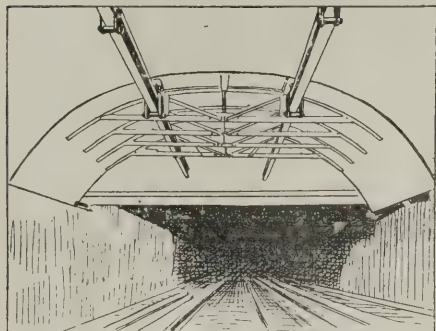
Recent improvements on the Metropolitan Railway system of London, of which we gave an illustrated account in our issues of April 17th and April 24th, include the widening of the St. John's Wood section of the line, involving the demolition of an existing double-track brick tunnel and the substitution of a considerably wider structure built of reinforced concrete and heavy steel roof girders. The difficulties of the work were increased by the necessity of providing against any interference with the traffic, which amounted to about 700 trains daily over this section. This traffic was only suspended between 1.35 and 3.50 a.m., and hence did not give sufficient time for the erection of temporary supports for false-work if that method of conducting the work had been feasible. The small clearance, about 4 in., between the rolling stock and the intrados of the arch made it necessary to use some other means of support for the required shield.

The problem was solved, according to a recent issue of "Engineering," by the use of a suspended steel shield or hood of the type shown in the sketch (p. 540) reproduced. This shield, which was designed by Mr. H. A. Bartlett, of Messrs. Perry and Co., Ltd., who were the contractors on the work, served to support the old

REINFORCED CONCRETE RACECOURSE STAND, WARWICK.
A. E. KING, ARCHITECT.

tunnel section during the work of demolition and to protect passing trains from any debris that might result from the conducting of the work.

The shield comprises a $\frac{1}{2}$ -in. steel plate 28 ft. wide by 11 ft. long, curved to fit the tunnel roof and braced with four light steel trusses with angle-bar stiffeners. These



stiffeners extend along the inner surface of the shield to a point a short distance above the clearance line of the railway coaches. A short length of shield was required on account of the curvature of the line over this section. The four trusses are supported by, and bolted to, two 12 in. by 6 in. I-beams 32 ft. long and placed 8 ft. apart parallel to the axis of the tunnel. The I-beams are suspended from the heavy girders of the new work by means of four stirrups on screw couplings. These girders were placed temporarily across and above the old tunnel section at 10 ft. intervals, and stirrups were suspended from the lower flange of these girders and passed through holes cut in the tunnel roof. The supported I-beams rested on roller bearings, which thus furnished a means of readily moving the shield ahead as the work progressed.

When in use the shield is drawn closely up to the roof by means of the screw couplings, thus permitting the demolition of a 10-ft. length of the brickwork down to about 12 in. above the springing line of the arch. After the traffic is suspended, the shield is lowered about 12 in. in similar fashion and moved ahead for the removal of another section of the roof. The shield was made 11 ft. long to allow the front end to project 12 in. under the next section of brickwork, and at the back a light vertical screen about 2 ft. high is placed to prevent material from falling on the tracks below. Small slots are provided in the plate for the supporting stirrups. The total weight of the shield is a little over five tons, and about one hour is required to move it from one working position to the next.

A NEW TYPE OF STEEL AND CONCRETE CONSTRUCTION.

A type of construction somewhat different from the ordinary is employed in the First Baptist Church of Syracuse, at present under construction. This method, according to the architect, Mr. Gordon A. Wright, is quite similar to the usual steel construction where the steel is fireproofed with concrete and reinforced concrete floor slabs are used.

A light construction is first erected, which supports the forms for floor slabs and girders. This light construction consists, first, of riveted-up structural members, which form part of the column reinforcements, second, of pairs of channels which are later imbedded in the girders; and third, of reinforced concrete beams,

which are made up and hoisted in place as the steel is erected.

Figs. 1 and 2 show the construction of the columns and girders. The structural steel members are designed to have sufficient strength to act as columns and support the construction loads of one storey. Where the columns are large, the steel is erected in place and the concreting done at the same time that the girders and the floor slabs are constructed. Where the columns are small, they are made on the ground, and erected as the steel channels and concrete beams are erected.

In the girders the two channels are used largely as a convenience in the construction. They are bolted to the structural steel of the columns, and also to stirrups cast in the ends of the concrete beams. Their purpose is to hold all other members exactly in position. They are designed to have sufficient strength to support the loads of construction when a temporary post is set under the centre of each girder. The lower flanges of the channels are so placed in the girders that they will be stressed to 16,000 lb. when the reinforcing rods are stressed to 20,000 lb. The steel in these lower flanges is figured as part of the reinforcement that resists bending. In addition to these uses, these channels are sufficient to take all the shear stresses. They make the girder practically safe under all conditions of construction. While half of the steel in these channels is useless after the building is erected, this is relatively a small item.

The reinforcing rods which are added to the girder are wired in place after the concrete beams have been set. These are so designed that they carry the loads of the concrete beams up into the top of the girders and distribute them on to the channels.

Fig. 3 shows the construction of the reinforced-concrete beams. Several deformed bars are used in the bottom of the beams, to resist bending. As soon as these bars reach the point where they are not required to resist the bending moment, they are bent up so that the same bars take care of both bending and shear stresses; and stirrups are not required. One of these bars, amounting to one-third of the reinforcement against bending, is carried to the top of the beam, over the support, and anchored into the girder as

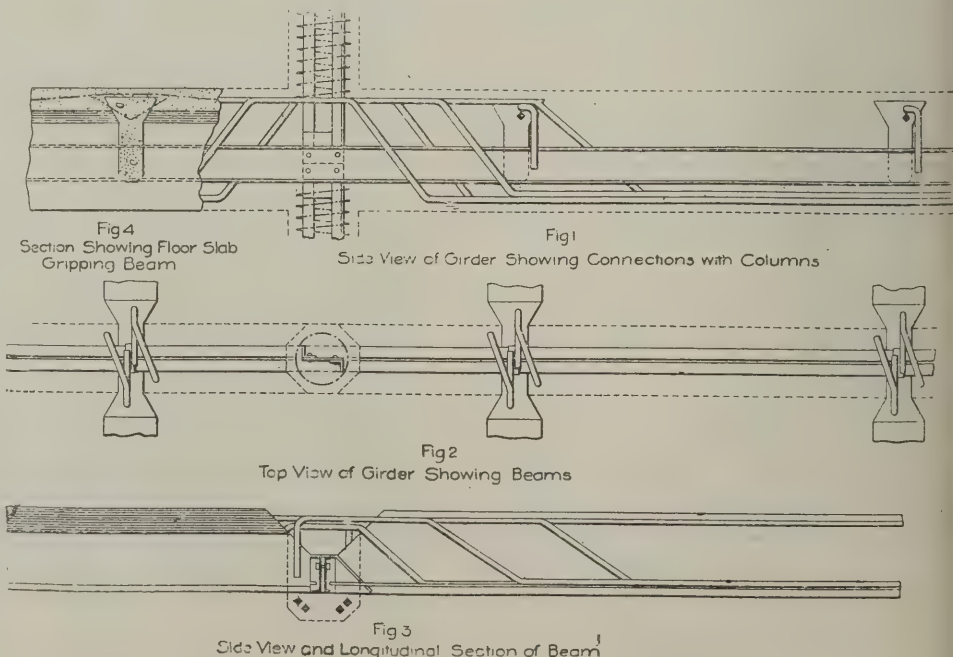
shown in Figs. 2 and 3. This construction gives a bending moment for the clear span between the girders of $WL/10.67$. This is equivalent to a bending moment of $WL/12$ where the span is taken from centre to centre of the girders. And this is the rule required for computing bending moments of continuous beams in the building codes of most American cities.

Mr. Wright states that there is an endless number of ways that these connections between the beams and girders may be made. The principal difficulty arising is a practical one, of allowing a sufficient leeway for the rods not being accurately cut and bent. This is taken care of in the construction shown. There is no difficulty in setting the stirrups in exact position in the forms, and a sufficient leeway can be readily left for inaccuracy in bending the end rods.

As to the efficiency of this connection, he states that a one-fourth full-sized model of two beams and a girder was loaded to destruction without showing any cracks at the connection.

In designing the beams which are to be hoisted, it is desirable that they be made as light as possible. The reinforcements are therefore arranged as shown in Fig. 3, the web of the beam being only sufficiently thick to properly fireproof the steel. The upper part of the beam is widened to give sufficient compressive area, but since it is imbedded in the floor slab, it is safe to assume a much higher unit strain than is usually allowed. The concrete is held against expanding, the same as in the case of a hooped column. The dotted lines, Fig. 4, show the compressive area that would be regarded if the beam was not imbedded in the slab. Mr. Wright states that several quarter-sized models of these beams have been made and tested, and that no difficulty was found in stressing the steel beyond its elastic limit without otherwise affecting the material of the beams.

The advantages of this construction over the monolithic construction are, first, safety, as there is no danger of a collapse while the building is being erected; and, second, economy. He notes that the small beams can be erected at less cost than they can be constructed in place. One beam a day can be made in a mould, and the beams can be erected when a week old



under ordinary weather conditions. The small columns can be made on the ground and erected very much cheaper than they can be constructed in place. This is quite an item where a skeleton concrete construction is used.

The false-work for supporting frames is done away with, and the number of forms required for floor slabs and girders can be largely reduced, as a continuous process of changing forms and placing concrete can be carried on. To use this construction an expensive concreting plant is not required, and therefore the overhead expenses are reduced.

To the architect superintending the work (Mr. Wright states) this method of construction presents the following advantages: When the rods for the beams are bent in accordance with details, the workmen cannot fail to get them in accurate position; and he has only to inspect the made-up beams to be sure that the steel is all there and properly placed. The girder reinforcements are much more easily inspected when wired to the channels than when placed in the usual trough. Further, it is a great convenience in designing to be able to concentrate a load at any point on the girder without having to change the general method of reinforcing, so as to provide for unusual shear at that point.

The building under construction in which this method is employed is known as The Temple, and is built in the English Gothic style, supporting light towers without spires. It includes two large galleried auditoriums with rooms for the various church needs, above which are three storeys of dormitory construction. Another example of a different type is the Edwards building at Rochester, which is 68½ ft. by 70 ft. in area, five storeys high, and designed for storage or light manufacturing.

THE ANCIENT ORIGIN OF IRON AND STEEL.*

BY SIR ROBERT HADFIELD, F.R.S.
(SHEFFIELD).

The use of iron, including in this term the combination of iron and carbon known as steel such as produced by the fusion or cementation processes, has without doubt existed from a time dating back to a very early period in the world's recorded history. Owing, however, to the avidity of the oxygen present in the air for this metal, it has been most difficult to obtain *ancient* specimens of iron. We have therefore but little definite evidence regarding its early manufacture and use. It is for this reason, the author thought, that the present description of some interesting Sinhalese specimens of this nature which came under his notice during a recent tour in the East would be of interest. Whilst information available from the East regarding iron of ancient production is fragmentary, yet undoubtedly a comparatively high state of metallurgical art and knowledge must have prevailed, not only centuries but more than a thousand years ago.

In the Colombo Museum the author inspected a set of ancient specimens of iron and steel which were obtained from some of the buried cities of Ceylon. These cities date back from about 500 B.C. This collection, which was formed quite recently, and has not been previously known or described, is in many respects unique, and the author was accorded the privilege of having placed at his disposal

a few of the specimens for investigation. Whilst there is often an impression that the use of iron, including in this term the alloy of iron and carbon known as steel, is a modern development, this is probably incorrect, as without doubt such knowledge really dates back to the earliest stages of tradition. The ancient Indian method of making steel in clay crucibles seems to be identical with the method thought to have been invented in England in the middle of the eighteenth century.

It has been asserted that the Egyptians knew how to harden copper so that it could be made to take and keep a cutting edge under the severe working stresses to which the tool must have been subjected in order to produce the hundreds of thousands of forms now to be seen in the Nile Valley from Cairo to Khartoum or beyond, over a distance of some 2,000 miles. Such work must have involved the labours of immense numbers of stonemasons, who would require tools. The author is strongly of opinion that no method of hardening copper was then known which would produce tools having a hard cutting edge, or which were at any rate at the same time tough enough to stand the severe impact blows such as stone-cutting work required. Copper alloyed with other elements can be hardened, as was recently evidenced in a paper read by Dr. Rosenhain and Mr. Lantsberry before the Institution of Mechanical Engineers. During the course of the discussion on the paper it was stated that a turning tool had been made which had cut iron. The author is of opinion, however, that such a material made up into chisels, wedges, and the like, would be of little value for hewing to shape and finishing the gigantic works in stone of the Egyptians.

It is far more probable that the ancient Egyptians were not only able to make steel for tools of all kinds, but also to cement and harden it; or, if they were not themselves steel workers, they obtained the necessary material and help from the workmen of another nation. There is, indeed, evidence that such was the case, and the facts available suggest that in the art of steel-making Egypt received assistance from India or China. There are, it is true, but few specimens of iron or steel tools or implements in and from Egypt. There is, however, a scythe of iron in the British Museum; examination shows it to be in such an oxidised condition that it is not possible to say definitely what is the nature of the material, although it is undoubtedly iron. This scythe, which the author has seen and handled, is so thin and corroded that it would almost fall to pieces unless most carefully dealt with. There is also an important specimen of iron taken from the Great Pyramid. In determining this general question as to the use of steel by the Egyptians, it should be remembered that there are several ways of endowing iron with the quality of hardening—that is, after heating and quenching it in water, or other cooling medium. The material ordinarily termed wrought iron can be made to acquire or take up carbon by cementation. This process is still largely carried out in Sheffield, principally upon bars which are by these means carburised with required varying percentages of carbon. These bars are chiefly made for the purpose of afterwards being melted into crucibles to produce the highest and purest qualities of steel. Such cemented steel, or "blister" steel, is in some cases directly worked up into tools having cutting edges, and is then termed bar steel. This aspect of the case is referred to because even if ancient specimens of highly

carburised steel are not available, it must be remembered that wrought or forged iron itself can be cemented or carburised, or the edges of tools can be so treated.

There is reason to believe that this knowledge, although in a crude form, was possessed by ancient workers in iron. Such methods may probably be regarded to a certain extent as "case-hardening." In such process the surface of the material to be treated must have been placed in a gaseous medium, or in a medium of charcoal or other pure form of carbon, then heated, and the surface carburised to the desired extent and depth. Such material, when again heated and quenched, would carry a cutting edge.

Somewhat singular to say, this knowledge appears to have been possessed; and to be proved in an interesting manner by one of these Sinhalese specimens which the author has examined, namely, a chisel which is proved to have its edges cemented or carburised.

The other and chief method of producing "cast steel"—that is, an alloy of metal with carbon varying from about 0.50 to 1.80 per cent., is, of course, by direct fusion of bar iron, or, in the case of a steely iron made in the manner just referred to, in a closed receptacle or "crucible." To accomplish this is required a high technical knowledge, for it is not merely necessary to obtain the requisite quality of bar or melting iron, practically free from or very low in sulphur and phosphorus, but there has also to be solved the equally difficult problem of preparing a receptacle or crucible to withstand handling at the high temperature required to fuse the materials being melted, and also the intense heat to which it is subjected without itself fusing. It is interesting to observe that in the Colombo Museum clay crucibles (of modern manufacture, it is true) can be seen, but apparently the same method has long been known and practised in the East. Therefore our modern belief that such method originated in Europe is probably not correct.

As before mentioned, the specimens in the Colombo Museum were taken from the ruins of some of the buried cities of Ceylon. No fewer than about fifty different articles are comprised, including those for agricultural implements, cutting instruments, tools for building and other trades, warlike implements, and general articles. Whilst the Sinhalese temples and monuments are of much later date than those of Egypt, nevertheless, in view of the metallurgical knowledge which was evidently possessed at a very early period in India and later in Ceylon, it is quite evident that the knowledge then prevailing in these matters must have been considerable. There is no evidence that the metallurgy of iron was understood in Egypt; it seems more than likely, therefore, that, as has been suggested by several authorities, aid was obtained by the Egyptians from the Far East—no doubt India or China, whence there was a constant stream of trade and commerce. They were thus enabled to carry out their many wonderful works in stone, including temples, pyramids, statues, obelisks, sarcophagi, sculptured walls, figures, tombs, steles, and the like, many of them prepared from the intensely hard Assouan granite, also red and black granite, quartz, porphyry, limestone, and sandstone. Some of the hieroglyphics have been found cut to a depth of no less than 2 in. To carry out such work would require tools of excellent quality.

In the Colombo Museum there are several hundreds of these ancient iron specimens. They comprise large and small chisels, including stone-cutting chisels,

* Extracts from a paper read before the Iron and Steel Institute.

about $2\frac{1}{2}$ in. in length and $\frac{1}{2}$ in. in diameter, axes, adzes, hoes, wedges, scissors, locks, keys, and many other articles. As regards the age of the specimens, Dr. Willey, F.R.S., the then Director of the Colombo Museum, states that this is vouched for by those thoroughly competent to make the statement, and that the specimens are 1,200 to 1,800 years old. They are in a remarkably good state of preservation, and many of them being quite bulky offer much better scope for examination than anything of the kind the author had ever seen or heard of. There seem good grounds for the assumption that the requisite skill and knowledge required for steel-making probably reached Ceylon from India.

One of the most notable ancient specimens of iron is the famous Pillar of Delhi, which is not the less interesting when we find it is stated that the city itself, "Imperial Delhi, the capital of all India," as Sir Alexander Cunningham in 1864 termed it, owed its name to this pillar. In the light of recent political events, this prophetic utterance is now an actually accomplished fact, for on December 12th, 1911, Delhi was made the capital of our great Indian Empire.

The iron pillar at Delhi is one of the most curious monuments in India. Whilst there are many large works of ancient times in metal, for example the Colossus of Rhodes, the gigantic statues of the Buddhists, and others, these were of brass or copper, all of them hollow and built up of pieces riveted together, whereas the Pillar of Delhi is a solid shaft of wrought

iron, upwards of 16 in. in diameter and 22 ft. in length, welded together, although the welding is not altogether perfect. In any case, it was a very creditable piece of work for a metallurgist of at least 1,600 years ago. At one time, owing to its peculiar colour or hue, it was thought to be of "mixed metal" or even bronze, this belief probably arising from the curious yellow appearance of the upper part of the shaft. A small fragment from the rough lower part of the pillar, which was submitted to Dr. Murray Thompson, of the College at Roorkee, for analysis, was found to consist of "pure malleable iron of 7.66 specific gravity." Practically pure iron (99.87 per cent. iron) has a specific gravity of 7.8477. Therefore, the material of this pillar could not have been pure. Probably it was a somewhat inferior type of wrought iron, permeated with slag, and high in phosphorus, like the Sinhalese specimens described by the author in this paper. Pure iron, having the specific gravity mentioned, would weigh 490 lbs. per cubic foot, the Delhi Pillar, with 7.66 specific gravity, would weigh 477 lbs. per cubic foot. The actual date of its first appearance is probably about A.D. 300. The height of the column above the ground was stated by Lieutenant Spratt, of the Royal Engineers, to be 24 ft., and the depth below ground 3 ft. He said that the column or pillar ends in a bulb like an onion, which is held in place by eight short thick rods of iron, on which it rests, and which at their lower extremity are let into blocks of stone, in which they are secured

by lead. The iron of which the pillar is made seems to have been originally in blooms of about 80 lbs. weight each.

The iron pillar at Dhār or Dhārā (the ancient capital of Malava, and thirty-three miles west of Indor), which was described by Mr. Smith in a paper to the Royal Asiatic Society in 1898, had a total length of no less than 42 ft. This is specially interesting owing to its extraordinary length. The three existing pieces measure 24 ft., 12 ft., and 6 ft. in length, aggregating 42 ft., in addition to a missing fragment, so that if these figures are correct, the column is approximately double the height of the Delhi pillar.

Mr. Smith rightly says: "Whilst we marvel at the skill shown by the ancient artificers in forging the great mass of the Delhi pillar, we must give a still greater measure of admiration to the forgotten craftsmen who dealt so successfully in producing the still more ponderous iron mass of the Dhār pillar monument with its total length of 42 ft., which, like the pillar at Delhi, is of the Gupta period, or about the year 321 of our Christian era."

There are also in existence in India several very large iron girders at Puri, ornamental iron gates of ancient origin at Somnāli, and a wrought-iron gun, said to be 24 ft. in length, at Nuwiri.

The author has given a detailed description of these two pillars, as they form the only known ancient large masses of iron in the world, so that they are indeed remarkable. But little more than a generation has elapsed since objects of this size were made possible, even in our time.

Having described in detail the results of his exhaustive tests of the objects from the Colombo Museum entrusted to him for investigation, the author said that it is important to know whether the facts stated in this paper warrant the conclusion, as they appear to do, that knowledge existed in ancient times with regard to hardening carburised iron. If they do, we should then have a satisfactory explanation of how the great works of stone, such as those seen in Egypt, were carried out in past ages—that is, probably by means of iron or steel tools, hardened and tempered to carry a cutting edge.

At the meeting at which this important paper was read "Further Notes on the Early Use of Iron in India" were communicated by Mr. H. G. Graves, of Calcutta, who confirms many of Sir Robert Hadfield's observations with regard to early proficiency in the making of iron in the East.

Surveyors' Institution Examinations.

The results of the recent Final Examination at the Surveyors' Institution are as follow: Mr. Harold G. Buss, Dover (the "Galsworthy" prize); Mr. C. A. E. Eachus, Enfield (the "Crawter" prize); and Mr. Arthur E. Jewell, St. Albans (Penfold Gold Medal). In the Intermediate Examination the following students head the list: Mr. H. J. Smith, Blackheath ("Institution" prize); Mr. Leonard A. Hempson, Ipswich ("Special" prize); and Mr. Richard Elphick, London, W. ("Quantities" prize). The prizes for non-student candidates were won by Mr. Ernest R. Canham, East Finchley ("Driver" prize and Penfold Silver Medal); Mr. Frank Dyer, Bradford, bracketed with Mr. Frank H. Heaven, Bridgend, and Mr. Gerald Hines, East Boldon, Durham (the "Building" prize); and Mr. A. C. Pawson, Watlington (the "Beadel" prize). The Scottish Committee's prize has been awarded to Mr. J. Loring Tweedie, Dumfries.



THE IRON PILLAR AT DELHI.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 29th 1912.

Volume XXXV.

No. 906.



"SHAKESPEARE'S ENGLAND" AT EARL'S COURT: "GREAT SIR HUGH'S" HOUSE.



DESIGN FOR WISCONSIN STATE CAPITOL: THE GRAND STAIRCASE.
CASS GILBERT, ARCHITECT.

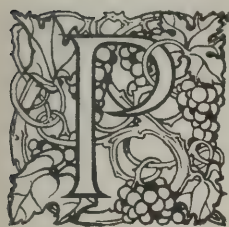
THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 29th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 906.

Shakespeare's England at Earl's Court.



PERHAPS "Shakespeare's London" would be a more suitable title for the show at Earl's Court than the larger title adopted, for what the scenic display really shows is the general aspect of city streets three hundred years ago. The Elizabethan gateway, with a distant perspective of Hatfield House in the rear, which faces the visitor oppo-

site the Warwick Road entrance, is not very promising; but when we come into the mimic town the impression is very satisfactory. We have the narrow, irregular streets and the picturesque houses, with their projecting upper storeys and half-timber work, all of which is very well carried out, and if we could only have had the cobblestone streets the illusion would have been almost complete. They would have been uncomfortable to walk on, it is true, but they would have given us the real effect of the ancient city; walking over boarded floors between the houses, one is constantly reminded that it is only a piece of scenery; one might almost have forgotten this otherwise.

Occasionally we have completely stone architecture in very late Gothic—the side of a church, for instance, and in the case of this, and of the houses altogether built in stone, the oversailing upper storey is not employed. When you see the narrow streets with the projecting upper storeys in timber work you realise what was the object of this method of building—to leave as much width as possible to the street and gain some additional space on the upper floor. That this was the common method of building in towns is brought home to us by Shakespeare himself, in the remark put into the mouth of Salario in the "Merchant of Venice," speaking of the anxiety he should feel if he had ships at sea:—

"Should I go to church,

And see the holy edifice of stone,

And not bethink me straight of dangerous rocks?"

Evidently Shakespeare did not see much of stone buildings in cities except in the churches. That Venice at that very time was full of splendid stone buildings would not trouble Shakespeare in the least; he took his scenery from the city that was familiar to him; there is no indication that he had any picture of the actual Venice in his mind; there is not a reference to such things as canals and gondolas. The scenic direction runs, in more than one case, "A Street in Venice," but in the author's mind it was a street in London. That seems absurd from our travelled point of view, but it gives the more value to Shakespeare's hints of the topography in his plays, as indications of the character of English cities of his day.

The "Official Guide" (which, except for its plan of the exhibition, does not give much practical information) contains a good article by Mr. Thornton-Smith on Tudor domestic architecture, in the course of which he remarks on the influence of locality on architectural treatment: "Did building stone exist in the neighbourhood? Then

stone would there be the predominant feature of the house" ("predominant material," it should be). "Was stone scarce? Then brick and timber provided the wherewithal of construction, for transport by land was always difficult, and by sea often impracticable." That is, in fact, the great distinction between ancient and modern conditions of building; facility of transport of materials has gone far to destroy local character in building. But the half-timber house, as Mr. Thornton-Smith admits later on, often found favour even where stone abounded. Of course, for one thing, it was cheaper to work than stone, but in towns another reason no doubt was that which is illustrated at Earl's Court—that space could be saved for the width of the street and regained in the upper storey of the buildings.

The centre portion of the block of buildings at the farther side of the Shakespeare town shows a portico which represents the first efforts of the Renaissance in England, in the shape of quasi-classical columns, crude in detail and clumsy in proportion. In the covered quadrangle behind this portico screen is what seems to be a reduced reproduction of the city cross at Winchester, or, at all events, something very like it. But the two most interesting things in the exhibition are no doubt the reproduction of Drake's ship, the "Revenge," and the reproduction of the Globe Theatre. These cannot be called models; they are a rebuilding of the ship and of the theatre, on the original scale, from documentary evidence. The ship does not come within our province,

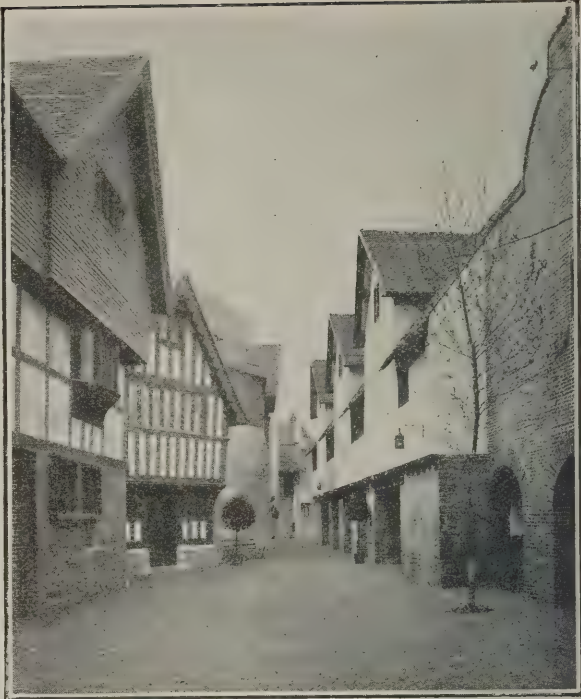


Interior of Ford's Hospital, Warwick.

"SHAKESPEARE'S ENGLAND" AT EARL'S COURT.



The Guildhall, Exeter.



A Street View.

"SHAKESPEARE'S ENGLAND AT EARL'S COURT.

except to remark that it is exceedingly well done, and that it is matter of real interest to see a fac-simile, actual size, of one of the ships which fought the Armada. But the Globe Theatre enables us to realise the arrangement and the conditions under which some of the greatest plays in any language were first produced. The Globe was a polygon erection, with so many angles that it approached pretty nearly to a circle, with three tiers of covered seats round it, a sanded pit in the centre, open to the sky, and a wooden stage projecting into the pit, with a curtain screen at the rear, from behind which the actors entered, but with no proscenium arch. The stage is open on three sides, and is looked down upon to its whole extent by the occupants of the upper gallery. Attempts are being made to give a realistic revival of the production of a play at the time when the Globe Theatre was

new (it had only a life of thirteen years); the noisy crowd of apprentices in the pit, the privileged fine gentlemen seated on chairs on each side of the stage, and the scene of the play of Pyramus and Thisbe from the "Midsummer Night's Dream," was acted with a good deal of spirit amid this revival of the original conditions. The auditorium, of course, except the pit, was occupied by a modern audience, so one did not get the entire verisimilitude of the ancient performance; but it certainly assisted one in realising for what kind of place and audience Shakespeare originally wrote. There is another attempt at realising this in Mr. Bundy's picture in the Academy, "The First Performance of 'The Merry Wives of Windsor,' 1599"; that is, the interior of the Globe Theatre, with an audience of the period, but it is rather crowded and confused in composition.



City Gate from inside, with Shops.



Tudor Buildings, Holborn Bars.

"SHAKESPEARE'S ENGLAND" AT EARL'S COURT.

We may refer again to Mr. Thornton-Smith's essay in the "Official Guide," to supplement his remarks on the reasons for the peculiarly attractive style of Tudor house architecture, as a class of building which arose when, after the introduction of artillery, castles were no longer effectual strongholds, when there was a reaction in favour of peaceable living, and men began to build themselves houses with the main object of being comfortable, with no special architectural mission to serve, but turning to the late Gothic of the churches and convents for suggestions in the architectural treatment of the dwelling-house. Beauty was not their object in building, but an architectural beauty was evolved through a simple and sincere treatment of the rather subdued style of late Gothic, with windows used just as they were wanted and not with the view of effect. Thus originated that peculiarly homelike style, not without dignity, which renders the English Elizabethan house unique as a representation of the architecture of the home.

A good deal of trouble seems to have been taken to give realism to the show by dressing a number of assistants in costumes of the period. We meet the guard on their rounds in a picturesque dress, with halberds and swords, and the Elizabethan admiral or captain, in his habit as he lived, comes up to parley with some one at the dockyard gate, and so on. One may be inclined to laugh at this as such an obvious piece of make-believe, but it has its picturesque effect, and it was interesting to hear Orlando Gibbon's lovely madrigal, "The Silver Swan," sung by a group of people and children dressed like those who may have sung it when it was first written. To cross the bridge into the outlying part of the grounds, with their shops, shooting-galleries, mountain railways, and what not, is to go from the picturesque to the vulgar aspect of life. But as to the exhibition proper we have nothing but congratulations for the supervising architect, Mr. E. L. Lutyens, F.R.I.B.A., and for the contractors, Messrs. Humphreys, Ltd., of Knightsbridge, by whom the whole of the Elizabethan buildings and streets have been modelled and built for Mrs. George Cornwallis-West.

A New View of College Architecture.

THE paper by a distinguished American architect, Mr. Cram, on American University architecture, read at the Institute of Architects on Monday last, was in a literary sense one of the finest papers ever read at the institute, not only in its substance, but in the admirable manner of its delivery; long as it was, we do not believe anyone found it too long; and it was not surprising that it evoked an unusual display of enthusiasm on the part of a very large audience. The subject matter was rather different from that which we usually expect from an American architect, for American architecture is usually presented to us as an art in which neo-Classic architecture, founded on *Ecole des Beaux-Arts* teaching, is the prevalent type. Mr. Cram, on the contrary, based his paper on a loving appreciation of the English collegiate type of architecture of the seventeenth or eighteenth centuries, and exhibited many photographs illustrating the treatment of the same type of architecture for the same class of buildings in the United States; claiming that in the States they were thus carrying on to its legitimate conclusion the type first elaborated in England, and that they were pursuing a logical course in doing so. One is so accustomed to the worship of everything French and the minimising of everything English by American writers on architecture, that this attitude of mind in regard to an important phase of our national architecture came as an agreeable surprise; but Mr. Cram is a Boston architect; and Boston, as is well known, has her own artistic and intellectual ideals, which are not exactly those of the United States at large; and she has no mania for high buildings and the commercial aspect of architecture. The lecture culminated with the description and illustration of the buildings on the splendid and romantic site at West Point, where America has established her great military training school-buildings, for

which the reader of the paper had himself been largely responsible.

Architectural Acoustics.

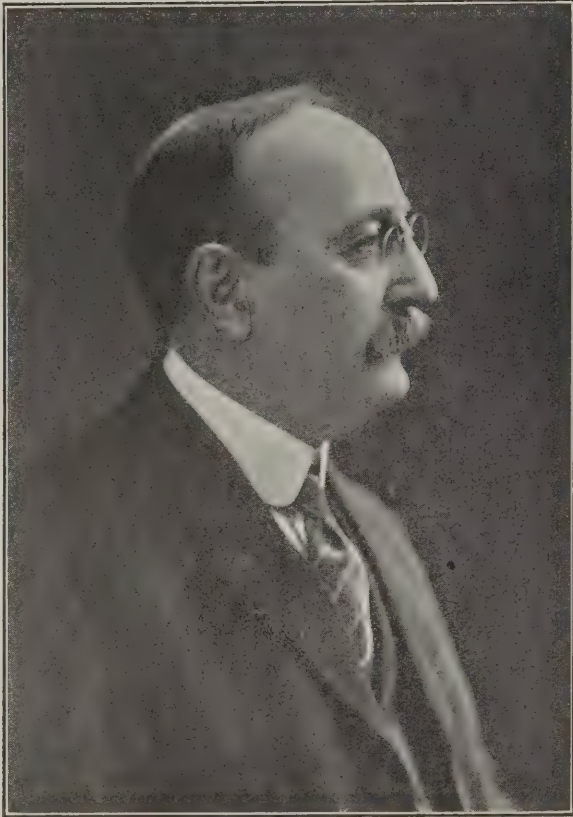
THE School of Architecture of Harvard University, to which, it will be remembered, M. Eugène Joseph Armand Duquesne, Grand Prix de Rome, was recently appointed Professor of Architectural Design, includes on its staff of thirteen instructors a lecturer on Architectural Acoustics. This is Mr. Wallace C. Sabine, A.M., whose extensive and peculiar knowledge of this rather recondite subject is made manifest in an instructive article which he contributes to the first issue of "The Architectural Quarterly of Harvard University"—a publication that, in substance and in appearance, is worthy of the best traditions of Harvard. The gist of Mr. Sabine's article, with some of the illustrations which accompanied it, are reproduced in another part of the present issue. In this important contribution to a subject that is too little understood, Mr. Sabine, while giving sufficient attention to theory, deals mainly with concrete examples in which he has been consulted as an expert of uncommon knowledge and experience. He disposes effectually of the notion that wires stretched across an interior are of any use in mitigating the nuisance from echo. He finds that they cannot affect sound either for better or worse, a fact that was prodigiously realised in a building in which nearly two miles of wire was put up, without the slightest effect except that of disfigurement. Sounding-boards he admits to be of some slight value occasionally; but he shows that the real remedy for bad acoustics is modification of the surfaces which give rise to them. The form or the substance may be to blame, and Mr. Sabine cites the curious case of a cylindrical smooth ceiling, which, by focussing a soprano voice along a focal line, caused it to be heard more sharply from the ceiling than from the singer. The remedy was to break the focal line by coffering the ceiling. The strange case of the hall of the House of Representatives at Rhode Island, where a speaker's words reflected from wall to wall, and then to the ceiling, whence they returned to the audience after an appreciable interval, with boomerang effect on the speaker, was set right by deadening the walls; and a sevenfold echo at the Metropolitan Museum of Art was cured by similar means.

Modernising Lyme Regis.

LYME REGIS is one of the few small towns of England which retain their ancient character almost unimpaired. It is a pity that there seems to be a move on the part of the town authorities to make a beginning in the direction of destroying its rather unique character in this respect. At the foot of the steep hill called Broad Street, the main street of the town, is a narrow street, Bridge Street, crossing a very ancient bridge connecting Broad Street with Church Street, a wider street going up the hill. The Corporation want to widen Bridge Street, an operation which will involve destroying an interesting old building known as the Fossil Shop, facing Broad Street. There seems really no adequate reason for doing this; Bridge Street is a very short street; and, as "A Ratepayer" of Lyme Regis writes to the "Times," the result of the narrowness of Bridge Street is that motor vehicles always go through it with caution, whereas if the street is widened they will go through faster and will be more likely to be dangerous to themselves and to others at the sharp turning into the foot of Church Street. The point of the whole matter, however, is that this will be the beginning of destroying the ancient aspect of Lyme; and when that kind of operation is once begun in a small town, it is likely to be the thin end of the wedge, and to lead to more alterations which will destroy the charm of the place. The Corporation would do well to remember that it is the picturesque and unspoiled character of Lyme Regis which is the attraction to visitors, and it is against their own interests to spoil it.

Mr. Cass Gilbert.

IN our issue for January 10th last, in connection with an illustrated account of the Woolworth Building, New York, we published a sketch of the architect, Mr. Cass Gilbert, which was made for us direct from life by Miss Farini. With this study Mr. Gilbert is not altogether pleased. "It has," he says, "an effeminate quality which I should be sorry to think would be carried down to posterity, if posterity is sufficiently interested in the subject to look at it." He, therefore, sends us a photograph in profile, which was taken about a year ago, and this we are pleased now to reproduce, as—to again



MR. CASS GILBERT.

quote Mr. Gilbert—"in the nature of a correction of an impression which the other drawing, however artistic, may give to those who do not know me." On another page of this issue we publish Mr. Gilbert's design for the grand staircase in the Wisconsin State Capitol—certainly a very masculine, vigorous conception.

Soil-Pipes and the Law.

A RATHER novel point was settled the other day, before the Lord Chief Justice and two other judges sitting in the King's Bench Court, in the case of the Marylebone Borough Council v. White. This was a special case stated by the police magistrate at Marylebone Police Court. The respondent, Sir E. White, in making alterations to the drainage of his premises, had fixed an iron soil pipe, the upper part of which was outside the premises, but the lower part was continued through a projecting back-addition, and was therefore inside the premises, and should, according to the by-law, have been of lead. Sir E. White, who had refused to alter the pipe on a summons from the authority to do so, seems to have relied (or his counsel relied for him) on the fact that there was no mention in the by-law of the case of a soil-pipe being partly inside and partly outside the premises, and that he was therefore entitled to consider it as an outside pipe which, through special circumstances, passed inside the building for a part of its length. The Court, however, refused to adopt this view, and allowed the appeal; considering that the by-law must be interpreted in its natural sense, viz., that any soil-

pipe within a building must be of lead, and the fact of part of the same pipe being outside the building did not invalidate the order for the part that was inside. There can be no doubt that the decision of the Court was reasonable, both in a logical and a hygienic sense.

It is, indeed, difficult to see how any other conclusion could have been anticipated. Sir E. White could hardly have hoped to win his case, and possibly he contested it with the object of drawing attention to what, on this showing, is an obvious defect of the law, which certainly ought to have been more explicit on a contingency, which, however, was apparently overlooked.

NOTES AT THE PARIS SALON.

AS with the Academy, so with the Salon—there is no really great picture this year; the general interest of the pictures is, however, quite up to the average standard. There are of course many uninteresting works and a good deal of what may be called artistic commonplace; but the number of pictures is so great that works which would attract a good deal of attention in the smaller area of Burlington House are almost overlooked at the Salon.

The large room at the top of the main staircase contains two important decorative paintings, one being the principal work of M. J. P. Laurens, the first celebration of the mediæval "Jeux Floraux," on March 3, 1324, a date which in itself suggests the kind of scene represented: a mediæval population seated under trees outside the city walls, listening to a troubadour on a platform in the foreground. It looks rather as if intended for execution in tapestry, though not so stated. The other is a great ceiling painting, by M. Gorguet, for the Salle des Mariages of a Mairie; it seems to symbolise the joy of life, but neither the title ("Prairial") nor the composition explains itself very well, and it is defective as a ceiling painting because it is essentially a vertical composition, which can only be looked at one way; a ceiling painting should always be an all-round composition. In the same room are M. Didier-Pouget's two landscapes: rather too scenic, but perfectly wonderful in their realistic power. We ought to have one or two of his landscapes at the Academy; they would make a sensation there—perhaps too much for the peace of mind of English landscape painters of the realistic school.

Perhaps the most perfect picture in the Salon is M. F. Humbert's "Portrait de Mlle. N—" (Gallery 37—we give the numbers of the rooms, as that is the only way of easily finding a picture). That represents the perfection of style in painting. M. Humbert is the modern Gainsborough, and he is every whit as good as Gainsborough. The tendency of some of the best French painters, in portraits of women, is to put too much glitter and brilliancy into the costume painting, so that it becomes a picture of the costume rather than of the person, a mistake M. Humbert never makes; he knows just where to stop. M. Paul Chabas (17), in "Matinée de Septembre," repeats, with a difference in lighting, a motive he has used once or twice before; a young girl standing in the shallow water of a lake, the water and landscape kept in a silvery shimmer which allows the blond head of the girl to stand out and yet retain its brightness. M. Maurice Chabas (21) has two twilight scenes in one of which, "Sérénité," a single small figure seated in the foreground seems to embody the sentiment of the scene.

M. Debat-Ponsan (23), who symbolised France last year as a white horse throwing over Napoléon, is still occupied with horses, but in "Ceux qui veillent" they are two chargers held in the foreground by the orderly dragoon while the officer uses his field-glass. M. Debat-Ponsan is usually either moral or patriotic in his art, but it is always capital painting. M. Tattegrain (13), another versatile painter of subject pictures, gives us this year

what is mainly a large and very powerful painting of cliff landscape, with two wolfish-looking figures, "sauveteurs d'épaves" (*anglicé*, "wreckers"), almost tumbling down the cliff path in their hurry to catch the spoil from the waves. Among figure pictures of the more imaginative type is M. Saintpierre's "La Fortune" (13), a nude figure, tiptoe on her wheel in the clouds, letting fall showers of coin from a cornucopia, while her eyes are veiled by the drapery caught round her head. It is an attempt to give a certain intellectual interest to a nude figure, and is what one may call a very effective piece of *bravura* painting. M. Lavergne's "Le Paradis Perdu" (30), Adam and Eve seated together in a twilight landscape, is a really fine piece of pictorial composition. Mme. Demont-Breton is herself again this year (her principal work last year was a failure) with "L'Aïeule" (32), a dear old peasant woman contemplating her sleeping grandson; M. Joseph Bail's "La Lectrice" (18) is a masterpiece of execution in the surroundings and of character in the two heads; M. Renard shows a rather pathetic picture of the death of Molière (8); and M. Roganeau (a name not familiar to us) exhibits a very large canvas, "Le Soir, à la Rivière" (6), a cold evening landscape with figures of women filling water-pots at the stream and walking away with them, which may be thought too large for the subject, but comes very near being a great picture; it is at all events solemn and impressive.

There are some very fine landscapes; M. Cabié's "La dune et le chêne vert" (37) is perfect in style and composition; M. Palézieux has a fine coast landscape (8); M. Ponchin has two fine landscapes in quite different styles, "Pines at Carqueiranne" (6), and "Sunset at Venice" (8). But the most powerful thing in the way of landscape is certainly M. Lefort-Magniez' "Surpris par la marée" (7), such an effect of storm in sea and sky as we have rarely seen on canvas; it is quite formidable to look at, and it is honest nature-painting, with no trick of effect or lighting.

On the staircase in the new Salon is an immense and rather fine decorative painting by M. Osbert, "Le Retour du Jour," which is a State commission—we are not told for what purpose; it is worth looking at, more so than M. Aman-Jean's "Les Elements," a large decorative painting commissioned by the State for an amphitheatre in the new Sorbonne, with allegorical figures of "Earth," "Air," "Geology," and other machinery of the kind. It is not beautiful either in colour or composition, and, in fact, goes to confirm our idea that M. Aman-Jean, who has a strong clique of admirers, is a painter a good deal over-rated. Among the smaller pictures in the New Salon, M. Béraud, in his "Chemin de Croix," repeats the idea which he has already exploited rather too often, of introducing the figure of Christ amid a rabble of modern personages; and M. Guillaume, in "L'Avis de la Famille," where a portrait is criticised by various members of the family (down to the little boy), exhibits an exceedingly amusing bit of pictorial satire.

As to the vast collection of sculpture (nearly 1,000 works) in the Old Salon, it is almost bewildering to try to say anything, as one would not know where to stop, there being so many things worthy of mention. M. Alfred Boucher may be said to have the honours of the year for two works of very different type; one the figure of a lady—said to be a portrait—clad entirely in close-fitting tights and buckling on a sword, with the title "S'il le faut"; the other, an exceedingly beautiful seated draped figure called "La Réverie." The large monumental works in the centre line of the hall are not so good as they sometimes are. M. Bacqué's monument to Michel Angelo shows him in a wide-brimmed hat, seated on horseback on the top of an immense rock, on the side of which are sculptured roughed-out reminiscences of some of his greatest sculptures: not a very happy idea. The colossal monument to "the glories of Toulouse," by M. Ducuing, on a triangular plan, has figures which are fine in themselves but too much detached from the centre erection. M. Laporte-Blairsy's monu-

mental fountain to the memory of Clemence Isaure (also to be erected in Toulouse) is clever and original, but the architectural details want conventionalising more. M. Jean-Boucher takes an historical subject, on a very large scale, "Réunion de la Bretagne à la France," which he treats as a group of personages in realistic robes and costumes, under the semi-dome of an apse; the long drapery of "La Bretagne" just saves the subject, which is not a good one for sculptural treatment. The two figures by M. Convers, "Inspiration" and "Harmony," to go on each side of the base of a column in the court of the new National Conservatoire of Music, form a noble piece of work. M. Allar exhibits a nude seated figure, with compasses in one hand and a large sheet in the other, who symbolises "Architecture," and M. G. Calvet an interesting model for a monument in honour of Aviation—"L'Univers acclamant les Conquistadors de l'Air"—a column crowned by a nude figure with aeroplane wings instead of arms, and standing on a wide circular base with a bas-relief of acclaiming figures. M. Mercié has a colossal draped bronze figure representing "Columbia," for some monument in America; there is a fine energy about it, but he has done more remarkable things than this. But among the works of more average size, single figures embodying various ideas, there are quite a number that are worth attention; it is impossible to enumerate them, and we can only recommend visitors to give more time and attention to the Salon sculpture than we fancy are generally accorded it. The annual collection of sculpture at the Salon represents a national energy and versatility in artistic production such as no other country can show.

THE LONDON SOCIETY.

THE second meeting of the London Society was held at the Suffolk Street Rooms on Thursday last. The general meeting, advertised for 8.15, was preceded by a business meeting, called for 7.45, at which Sir Aston Webb took the chair. A draft set of rules was submitted to and formally approved by the meeting, subject to one or two suggestions which the chairman undertook that the council should take into consideration. These were mainly in relation to the subscription, which had been fixed at a guinea. The amendment was moved that it be reduced to half a guinea on the ground that as it was desirable to influence public opinion as widely as possible it was much better policy to have a wide membership with a low subscription than a more restricted membership with a higher subscription; and we hope this suggestion will be adopted. At the public meeting Lord Plymouth took the chair, and made a few preliminary remarks as to the principles on which the society was founded and the kind of work it hoped to do, and Mr. Raffles Davison then read a paper, illustrated by a number of lantern slides, the special object of which was to show the need of improvement in London. The paper was a little too long, but was very amusing and trenchant in its criticisms, and a number of the lantern slides formed most dramatic illustrations of the ugliness, and the want of common thought and care as to appearance, which are so much in evidence in various parts of London. Against one of these satirical views, however, we must protest strongly. After a view of Blackfriars Bridge, with the railway viaduct behind it, a second specially prepared view was exhibited leaving out the railway viaduct, to show how much better the bridge looked without this background to it. Now the fact is that Blackfriars Bridge is one of the most offensive erections in London, a piece of bad, tawdry sham Gothic, while the railway bridge, though not beautiful, is not in bad taste, as it is merely construction with no attempt at ornament of any kind; and a piece of simple utilitarian structure is a great deal better than a piece of tawdry design pretending to be architectural. That illustration was a mistake, and should not have been shown.

NEW LIGHT ON ARCHITECTURAL
ACOUSTICS.

SINCE 1895 Mr. Wallace C. Sabine, A.M., has been constantly engaged in the investigation of the subject of architectural acoustics, and in 1900 he contributed to the technical Press an important series of articles embodying the work of the first five years and dealing mainly with the phenomena of reverberation. During the next five years he extended this enquiry over the range of the musical scale, and in 1906 published the results in the Proceedings of the American Academy of Arts and Sciences. Thereafter he directed his attention to interference and resonance, the effects of peculiarities of form, and the causes of variation in audibility in various parts of an auditorium, and he promises to publish the results during the ensuing year. In the meantime, being Professor of Physics and Lecturer on Architectural Acoustics in Harvard University, he has contributed to the "Architectural Quarterly" of the University, of which the first number has just been issued, an interesting and informative article, in which he considers some of the problems involved in the correction of the defective acoustics of completed buildings, reserving for future consideration the important subject of the preparation of plans in advance of construction; and the corrective methods here discussed are of comparatively simple character—the author describes them as "medicinal rather than surgical." In the cases cited there have been no radical changes in form, of dimensions, or in the positions of wall surfaces, or in ceiling heights.

Those old but nearly obsolete devices, stretched wires, and sounding-boards, Mr. Sabine discards, finding that the stretched wires are utterly valueless—devoid of scientific justification and showing no record of success, either when only four or five wires are stretched across an auditorium or when miles of wire have been stretched across one room. In a few instances in which the wires have been credited with some slight improvement in the acoustics it has been found that changes in form or occupancy have probably caused the beneficial change which has been attributed to the wires. Apart, however, from the absence of proof of effectiveness, there is, Mr. Sabine declares, no physical basis for the device. "The sound whose echoes these wires are presumed to absorb scarcely affects the wires, giving to them a vibration which is at most of microscopical magnitude. If the string of a violin were free from the body of the violin, if the string of a piano were free from the sounding-board, if the string of a harp did not touch the thin sounding-board which faces its slender back, when plucked they would not emit a sound which could be heard four feet away. The sound which comes from each of these instruments is communicated to the air by the vibration of its special sounding-board. The string itself cuts through the air with but the slightest communication of motion. Conversely when the sound is in the room and the string at rest the vibrating air flows past it, to and fro, without disturbing it, and consequently without itself being affected by reaction either for better or worse."

The value of the sounding board is not altogether denied, but has been over-rated. This subject, however, which Mr. Sabine seems to have investigated with characteristic thoroughness, he reserves for further discussion on a future occasion; contenting himself for the present with the statement that unless the sounding board is large the benefit from it will be but small.

Among the illustrations to Mr. Sabine's article are two (which are not reproduced here, as the following description will be found sufficiently lucid) of the Congregational Church in Naugatuck, of which Messrs. McKim, Mead, and White are the architects. It was built with a smooth cylindrical ceiling, of which the curvature was such as to have the effect upon a voice from the platform of focussing the sound, not at a point, but along a focal line. "The difficulty was evident with the speaking,

but may be described more effectually with reference to the singing. The position of the choir was behind the preacher and across the main axis of the church. On one line in the audience, crossing the church obliquely from right to left, the soprano voice could be heard coming even more sharply from the ceiling than directly from the singer. The alto, starting nearer the axis of the church, had for its focus a line crossing the church less obliquely. The phenomena were similar for the tenor and the bass voices, but with focal lines crossing the church obliquely in opposite directions." The defect was very satisfactorily overcome by breaking up the smooth ceiling into a series of coffers of sufficient depth to prevent the sound from travelling along a focal line.

Another type of defective acoustics is illustrated by the instructive (and it is to be hoped unusual) case of the hall of the House of Representatives in the Rhode Island State Capitol. Here there is, of course, no stated place from which the sound proceeds—that is to say, there is no platform or rostrum. Speeches are made from various positions on the floor of the hall. To about half the height of the room the walls were of stone, and above that they were of stone and plaster, and the ceiling, as will be seen from the illustration here reproduced, was coffered. The difficulty was that the sound of a speaker's voice, striking the side wall, was reflected across the room to the opposite wall and back again, to and fro, mounting gradually until it reached the ceiling. It was thence reflected directly down upon the audience. Although the ceiling had some curvature, this was not sufficient to produce a distinct focussing of the sound, but in the course of its travelling the sound met only feebly absorbent surfaces, and therefore returned to the audience with but little loss of intensity, and it came back after such an interval of time as to cause great confusion to the ear, though there was no distinct echo. The remedy adopted was that of diminishing the reflecting power of the two side walls, by placing a suitable felt on the plaster walls between the engaged columns and covering it with decorative tapestry. As may be easily inferred from the accompanying illustration, the design of the room very fortunately lent itself to an appropriate execution of this treatment; the result being as charming artistically as it is effective acoustically.

Mr. Sabine was not deterred by the problem presented by that Hall of the Seven Echoes—the lecture-room of the Metropolitan Museum of Art, New York. This hall is a semi-circular auditorium, with the semi-circle slightly continued by short straight walls. The platform (see illustration) is nearly, though not wholly, within a broad but shallow recess. The body of the auditorium is surmounted by a spherical ceiling, with short cylindrical extension following the straight side walls. In the centre of the ceiling is a flat skylight of glass. In this



HALL OF THE HOUSE OF REPRESENTATIVES, RHODE ISLAND STATE CAPITOL. MCKIM, MEAD, AND WHITE, ARCHITECTS.

room the reverberation was not merely excessive, but it resolved itself by focussing into a multiple echo, the components of which followed each other with great rapidity, but were distinctly separable. The number distinguishable varied in different parts of the hall. Seven were distinguished at different parts. To improve the acoustics the ceiling was coffered, the limiting depth and dimensions of this coffering being determined in large measure by the dimensions of the skylight. The semi-circular wall at the rear of the auditorium was transformed into panels, which were filled with felt, over which was stretched burlap, as shown in the second illustration of the pair representing this interior.

The foregoing cases, Mr. Sabine remarks, are comparatively simple. Complexity arises where various shapes give rise to different reverberations, each space "pouring sound into and receiving sound from others."

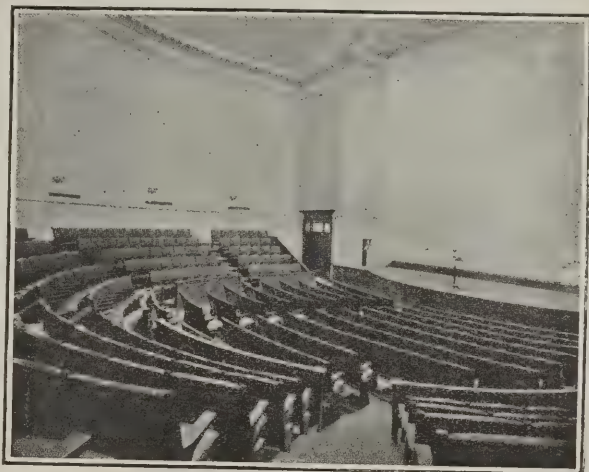
Cathedrals commonly present, in varying degree, the geometrical complications which lead to excessive reverberations, and the cathedral in Detroit, built from the designs of Messrs. Cram, Goodhue, and Ferguson, presented an interesting problem in acoustics. The nave, broad at one end and moderately narrow at the other, represented in effect two simply connected spaces, the lower space, when filled with people, being abundantly absorbent of sound, while the clerestory part was not absorbent. The corrective applied was felt placed in the panels of the ceiling, which felt, treated decoratively, produced highly satisfactory results acoustically as well as architecturally. Similar treatment was successfully applied to the high and reverberant transept, to the central tower, and to other parts of the building.

The New Theatre, New York (Messrs. Carrère and Hastings, architects), seating 2,300 persons, was improved acoustically by changing the position of the twenty-three boxes, and by correcting the excessive height of the main auditorium by the provision of an oval canopy (major and minor horizontal dimensions, 70 ft. and 40 ft.), which in effect lowered the height of the ceiling 20 ft., and has resulted in pronounced improvement.

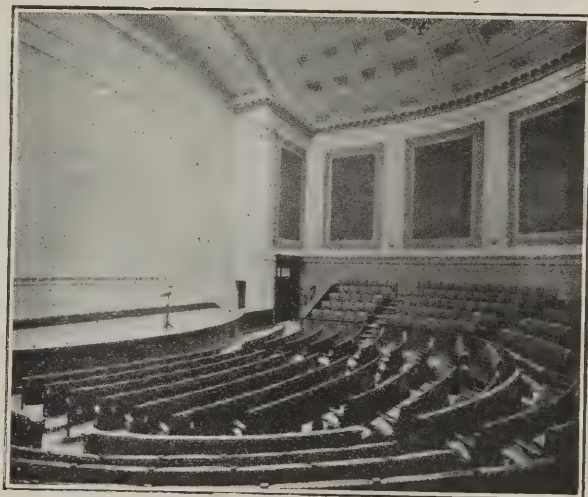
In discussing the principles involved in the examples recorded above, Mr. Sabine says that when sound is produced in a confined auditorium it spreads spherically from the source until it reaches the audience, the walls, or the ceiling. It is there in part absorbed and in part reflected. The part which is reflected retraverses the room until it meets another surface. It is again in part absorbed and in part reflected. This process continues until, after a greater or less number of reflections, the sound becomes of negligible intensity. Thus at any one time and at any one point in the room there are many sounds crossing each other. In a very simple auditorium, such as a simple rectangular room with plain walls and ceiling, this process is not difficult to follow, either step by step, or by large, but entirely adequate, generalisations. When the conditions are more complicated it is more difficult to analyse; it is also more liable to be a vitally significant factor in the problem. That it has heretofore been inadequately discussed has arisen from the failure to take into consideration the phenomenon of diffraction in the propagation of a sound nearly parallel to an absorbing audience, the phenomenon of diffraction in reflection from an irregular surface, and, above all, the phenomenon of interference. The first of these three considerations is of primary importance in calculating the intensity of the sound which has come directly from the source, in calculating the effect of distance in the audience, and in calculating the relative loudness on the floor and in the gallery, and at the front and at the back of the gallery. The second consideration enters into the calculation of the path of the sound after reflection from any broken or irregular surfaces. The third is a factor of the utmost importance when the sounds which are crossing at any point in the auditorium are of comparable intensity and have travelled paths of so nearly equal length that they have originated from the same element. This latter calls for a more elaborate explanation.

In both articulate speech and in music the source of

sound is rapidly and, in general, abruptly changing in pitch, quality, and loudness. In music one pitch is held during the length of a note. In articulate speech the unit or element of constancy is the syllable. Indeed, in speech it is even less than the length of a syllable, for the open vowel sound which forms the body of a syllable usually has a consonantal opening and closing. During the constancy of an element, either of music or of speech, a train



Before Treatment.



After Treatment.

LECTURE ROOM, METROPOLITAN MUSEUM OF ART, NEW YORK.
MCKIM, MEAD, AND WHITE, ARCHITECTS.

of sound waves spreads spherically from the source, just as a train of circular waves spreads outward from a rocking boat on the surface of still water. Different portions of this train of spherical waves strike different portions of the auditorium and are reflected. After such reflection they begin to cross each other's paths. If their paths are so different in length that one train of waves has entirely passed before the other arrives at a particular point, the only phenomenon at that point is prolongation of the sound. If the space between the two trains of waves be sufficiently great the effect will be that of an echo. If there be a number of such trains of waves thus widely spaced, the effect will be that of multiple echoes. On the other hand, if the two trains of waves have travelled so nearly equal paths that they overlap, they will, dependent on the difference in length of the paths which they had travelled, either reinforce or mutually destroy each other. Just as two equal trains of water waves crossing each other may entirely neutralise each other if the crest of one and the trough of the other arrive together, so two sounds, coming from the same source, in crossing each other may produce silence. This phenomenon is called interference, and is a common phenomenon in all types of wave motion. Of course, this phenomenon has its complement. If the two trains of water waves so cross that

the crest of one coincides with the crest of the other and trough with trough, the effects will be added together. If the two sound waves be similarly retarded, the one on the other, their effects will also be added. If the two trains of waves be equal in intensity, the combined intensity will be quadruple that of either of the trains separately, as above explained, or zero, depending on their relative retardation. The effect of this phenomenon is to produce regions in an auditorium of loudness and of comparative or even complete silence. It is a partial explanation of the so-called deaf regions in an auditorium.

It is not difficult to observe this phenomenon directly. It is difficult, however, to measure and record the phenomenon in such a manner as to permit of an accurate chart of the result. Without going into the details of the method employed, the result of these measurements for a room very similar to the Congregational Church in Naugatuck, is shown in the accompanying chart. The room experimented in was a simple rectangular room with plain side walls and ends, and with a barrel or cylindrical ceiling. The ceiling of the room was smooth like the ceiling of the Naugatuck Church before it was coffered. The result is clearly represented in the diagram illustrating distribution of intensity, in which the intensity of the



Diagram showing distribution of sound intensity on head level in room having barrel-shaped ceiling with centre of curvature on floor level.

sound has been indicated by contour lines in the manner employed in the drawing of the geodetic survey maps. The phenomenon indicated in this diagram was not ephemeral, but was constant so long as the source of sound continued, and repeated itself with almost perfect accuracy day after day. Nor was the phenomenon one which could be observed merely instrumentally. To an observer moving about in the room it was quite as striking a phenomenon as the diagram suggests. At the points in the room indicated as high maxima of intensity in the diagram the sound was so loud as to be disagreeable, at other points so low as to be scarcely audible. It should be added that this distribution of intensity is with the source of sound at the centre of the room. Had the source of sound been at one end and on the axis of the cylindrical ceiling, the distribution of intensity would still have been bilaterally symmetrical, but not symmetrical about the transverse axis.

A full discussion of this phase of the subject Mr. Sabine

reserves for another paper, which is now about ready for publication.

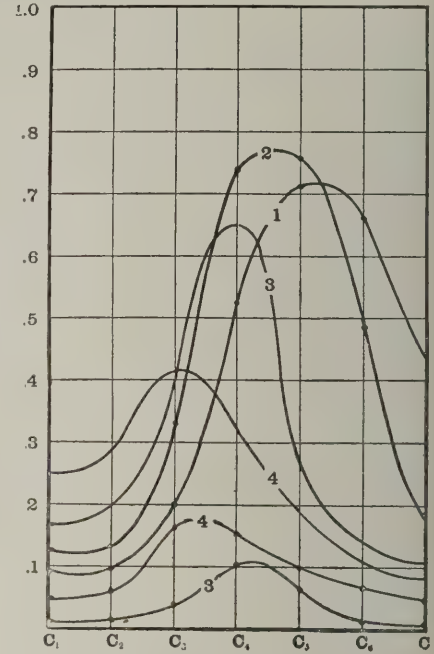
If a sound of constant pitch is maintained in an auditorium, though only for a very brief time, the sound spreading directly from the source, together with the sound which has been reflected, arrives at a steady state. The intensity of the sound at any one point in the room is then the resultant of all the superposed sounds crossing at that point. As just shown, the mutual interference of these superposed sounds gives a distribution of intensity which shows pronounced maxima and minima. However, the probable intensity at any point, as well

as the aggregate intensity over the room, is the sum of the components. Whatever the distribution of maxima and minima the state is a steady one so long as the source continues to sound. The steady condition in the room is such that the rate of absorption of the sound is equal to the rate of emission by the source.

If after this steady state is established the source is abruptly checked, the different trains of waves will continue their journey, the maxima and minima shifting positions. Ultimately the sound will cease to be audible, having diminished in intensity until it has passed below what aurists call the "threshold of audibility."

The curves in the accompanying diagram show the efficiency of various coverings. Curve 1 is the normal exposed efficiency of the felt above referred to. Curve 2 is its efficiency when covered by burlap attached to silicate of soda. This covering was so sized as to be practically impervious, but was in contact with and a part of the felt. Curves 3 and 4 show the efficiency of coverings which are not in contact with the felt, but which are stretched. Both coverings are impervious—3 relatively light, 4 heavy. Number 3 weighs 0.87 ounces to the square foot; number 4 weighs 2.58 ounces to the square foot. The materials of which these coverings are made have no bearing on the question, and would be misleading if stated. The really significant factors are their weight, the tension with which they are stretched, their elasticity, and their viscosity. The weight of the several coverings has been stated; the other factors can be defined best by means of their independent absorbing powers. Lower curves 3 and 4 indicate the absorbing power of the membrane coverings alone. It is interesting to note that the diaphragm which has by itself the least absorbing power has the greatest absorbing power when combined with the felt. This is by no means a paradox. It is exactly the result which could be predicted by application of the simplest of physical principles.

It is sincerely to be hoped that Mr. Sabine will collect the important papers on this important subject which he has contributed to various periodicals, and issue them, together with the as yet unpublished results of his patient, long-continued and thoroughly scientific studies, in volume form. Such a book would at once become a standard authority on a subject which the author has made peculiarly his own.



Curves showing the sound-absorbing qualities of different materials. Curve 1, felt; 2, burlap cemented with silicate of soda; 3, light membrane as described; 4, heavy membrane as described; lower curve 3, light membrane alone; lower curve 4, heavy membrane alone.

RECENT UNIVERSITY ARCHITECTURE IN THE UNITED STATES.*

BY RALPH ADAMS CRAM, F.A.I.A., F.R.G.S., LITT.D.

In one of the best-written and best-read papers ever heard at the Institute, Mr. Ralph Adams Cram traced the history of college building in the United States, and incidentally revealed himself as an enthusiastic lover of collegiate Gothic.

ALTHOUGH in the conception of colleges in the United States there has been from time to time a yielding to novel impulses, there is always a return step by step to the old ideals and sound methods of English colleges, for with the reaction towards a broader culture comes the return to the architecture of Eton and Winchester, Oxford and Cambridge, that so fully expressed that very culture itself.

Dearth of Early Work.

Of course, practically all the seventeenth century work, and nine-tenths of that of the eighteenth, is gone, including much of the best; but fortunately at Harvard there remains a notable group that has yielded neither to vandalism nor conflagration. The typical English quadrangle arrangement was abandoned for a grouping of isolated buildings, at first more or less formal, then developing into final chaos as other men with other minds came on the scene and placed their buildings, and designed them also, at their own sweet will. As for the material, it was almost invariably brick, at first imported from the old country, for the visible stone supply in New England was intractable granite; and even where a kinder material was available, there was in the beginning little skill in cutting, and later little money to pay for the labour involved. With few exceptions the trimmings of doors and windows and cornices were delicately moulded wood painted white, the Vignolan laws as to proportion being intelligently modified to fit the new material, while the roofs were covered with split shingles.

The "Jeffersonian" Style.

The first evidence of decadence appears in the advent of that more pompous style Jefferson did so much to advance. Hitherto what had been done was done simply and unaffectedly: now came the conscious desire for architecture, which is a dangerous ambition at best. At the University of Virginia we have the original setting out, almost intact, and if we deplore the unnecessarily unreasonable classical porticoes with columns, entablatures, and pediments complete—and all built of pine boards framed up in the semblance of a newly discovered Paganism—we must admit the great dignity of the plan and the singular charm of the ensemble.

This "Jeffersonian" style rapidly took the place of the old Georgian, but its day was brief, and somewhere between 1820 and 1830 occurred that ominous point when the last flickering tradition of good taste and the last weak impulse of instinctive art vanished—for the first time in history—and the new era began wherein the desires and predilections of society as a whole were no longer for good things and beautiful things, but explicitly and even clamorously for bad things and ugly things, while the uncertain offices of the architect were the only agencies that from time to time redeemed the general chaos.

"Not Very Gothic."

Fortunately there was little collegiate building with us during this dismal second

quarter of the nineteenth century, or, rather, and also fortunately, little of it has survived, and when first the architect appears on the scene as the mentor rather than the exemplar of public opinion, it is in novel guise; nothing less, indeed, than as the protagonist of Gothic. He was not *very* Gothic, I must admit, and in the beginning he contented himself with a few apologetic and quite casual buttresses, pointed arches over his door and window openings, an octagonal turret or two, and, of course, battlements, usually of two-inch deal neatly painted, and sometimes sprinkled with sand as a concession to appearances. What took place in domestic and ecclesiastical architecture I dare not even reveal to you, but the college work was a shade less horrific, for sometimes, as at West Point, it was of stone, and good stone work will cover a multitude of sins—as it still does in our own day and generation, I believe.

From the close of the war between the States down to about 1880, the new Gothic that expressed Ruskin's really enormous influence might be said to have run riot through our colleges. There were those like Renwick and Congdon, and Mr. Haight, who is still living, that held conscientiously to the grave and archaeological type established by the Pugins; there were others who tried to incorporate Ruskinian doctrines in more personal, original, and mobile work, as Blomfield and Butterfield were doing here in England; the results were at least lacking in monotony, but few of them achieved the simplicity and the dignity of Mr. Haight's work, while many of them reached a point of violence and anarchy hardly to be matched in history.

Richardson's Great Work.

It was all a "false dawn," however, and ceased almost in a moment (though for a brief period only) when that great genius and greater personality, Richardson, flashed like an unpredicted comet across the sky. The later 'seventies were desperate, no less, and the group of conscientious men could not withstand the flood of falsity and bad taste and artificiality that involved the whole art of architecture. Richardson alone turned the tide; and deliberately forced a new and alien style on a bewildered people. He did great work, some of it immortal work, in his powerful mode, but he died before his mission was accomplished, and though he killed the "French roof style" and the futile Gothic, and all the other absurdities, he left behind no one of his own calibre to carry on the crusade, but instead a multitude of imitators who, though at first doing fine work under the memory and inspiration of their master, gradually turned away into other fields, leaving the Romanesque propaganda to the most inadequate exponents imaginable. For a decade we wallowed in Lilliputian cyclopænia, and then, to change the simile, the summer storm swept west and south, and over the desolation it had left loomed, almost simultaneously, three new tendencies—Colonial, Perpendicular Gothic, and "Beaux-Arts." With a magnanimity rare in history, these three rivals more or less succeeded in establishing a *modus*

vivendi, Colonial taking over part of the new and again triply dividing Gaul in the shape of domestic work, Gothic annexing so far as it could all collegiate, scholastic, and ecclesiastical building, while to the Beaux-Arts propaganda fell all it could get of the rest—particularly Carnegie libraries, town houses, and banks. As a matter of fact, this partitioning of architectural activity was not the result of amity, nor was it in the least definitive; the Colonial style claimed the patronage of our Nonconformist brethren (with show of reason and propriety); Gothic tried vainly to break into the library fold; while the Beaux-Arts architects made unavailing eyes at the Church, and, indeed, claimed everything in sight. Their pretensions did not go without questioning, however, for in the meantime the old and most classical classic was reborn (it had never wholly died), and at the hands of Charles McKim it suddenly achieved a height of serene nobility where it could and did challenge the claims of its rivals. And there were other claimants for the architectural crown now so completely "in commission"; there was the Spanish pretender, with its doubtful offspring, the quaintly denominated "Mission style," there was the secessionist Americanism of the inspired but unguarded Mr. Sullivan; there was a kind of neo-Byzantinism; there was a hidden but persistent Japanese propaganda. In fact, I was wrong when I said that the Architectural Gaul was divided into three parts; it is not such a triple partition that confronts us now; it is an omnivorous eclecticism that bears some of the earmarks of anarchy. To use one of our own phrases, "everything goes," and much of it goes exceedingly well, amazingly so, in fact, but the result is somewhat lacking in the qualities of unity and lucidity.

Georgian or Gothic—Which?

Fortunately we have to do with few of the varied schools, for though all of them have footholds in the several colleges, only two have established their claims—Georgian and Gothic, and at the present time the latter has the call and has produced the most notable results; it may almost be said that except where lack of funds or climatic conditions argue against Gothic, this has the field absolutely to itself. The ascetic and fastidious classicism of McKim created Columbia University, and occurs sporadically elsewhere; the Boulevardesque of the Beaux-Arts men appears in a single building at Yale and in the slow-growing University of California and the Naval College at Annapolis; Spanish elements go to the making of Leland Stanford, and in Texas my own firm is doing "a deed without a name" that you must judge for yourselves and justify, if you can, and as we do ourselves. Elsewhere it is, as I said, Georgian or Gothic, and to the college trustee it is now the question "under which King, Bezonian?" Harvard, after swinging the circle of every possible architectural dogma and heresy, has settled down, as she should, to Georgian, as has Williams, and as have so many of the smaller and poorer preparatory schools and colleges, particularly in the South, but Yale, West Point, Pennsylvania, New York, Princeton, Bryn Mawr, Washington University, St. Louis, and Chicago, together with all the larger preparatory and Church schools, and the newer Roman Catholic institutions, are uncompromisingly Gothic of the type made immortal by Winchester, Eton, Oxford, and Cambridge.

Mr. Cram gave an exhaustive account of Princeton University, of which he is Supervising Architect. The title itself,

* Extracts from a paper read before the Royal Institute of British Architects, May 20th.

he said, will indicate at once one of the many points of divergence between the English and American systems, for he understood there is no university in the United Kingdom where one man is given almost complete authority over all matters of the choice of architects, supervision of their work both in design and execution, acceptance or rejection of gifts, and their placing, if accepted, the development of roads and paths, and the planting of trees and shrubs. Until recently such an office was unknown in America, but since Princeton took the lead some five or six years ago, others have followed rapidly, and the practice has now become established.

Points from Princeton.

In the new plan of Princeton, which shows the University as it now is, and indicates its future lines of development, there is seen a strong tendency towards the standard type. The dormitories are assuming quadrangular form, and in time may become full residential colleges, each with its common room and great hall, and, when times have still further changed, its chapel. In the beginning our dormitories were simply barracks, with living rooms opening off long halls, with remarkable results so far as order and discipline are concerned. Now the "entry" type is almost universal, the type that holds in England—the standard type of suites of a study and two bedrooms for two undergraduates, and a study and bedroom for each graduate student. In the former case each stairway is separated from the next by a party wall, unbroken except in the basement, to which all staircases descend, and here a general corridor gives access to groups of baths and toilets, and to the boxrooms, and to the other staircases in the quadrangle as well. In the newest of our buildings for graduate students every two suites have a private bath between. Notable is the magnificence of the gymnasiums. The mania for natural science is less dominant at Princeton than elsewhere, but two of the newest and most magnificent buildings are devoted the one to biology the other to physics.

A notable Gothic Renaissance amongst American colleges began with the new library at Princeton. John Stewardson and Walter Cope brought into being at Princeton, Bryn Mawr, and the University of Pennsylvania structures that are to the author singularly beautiful and inspiring, and they left their mark for all time on American architecture.

New Era in Scholastic Architecture.

About the same time an Englishman, Mr. Vaughan, sometime pupil of George Bodley, began the introduction of the same style into our great preparatory schools. His work at St. Paul's marked a new era in this category of scholastic architecture, and was continued later in more sumptuous fashion at Groton. My own firm has been following his leadership in the Convent School of St. Mary, at Peekskill, and the Taft School in Connecticut, while there are innumerable examples of the same sort of thing all over the country. It was really Cope and Stewardson's work at Princeton that set the pace, however, and so beautiful was it, so convincing as to the possibilities of adapting this perfect style to all modern scholastic requirements, that the University authorities passed a law that for the future every building erected at Princeton should follow the same general style. The altogether wonderful quadrangles of Holder and Hamilton Halls, by Messrs. Day Brothers and Klauder, of Philadel-

phia, marked for the author almost the highest point achieved in Collegiate Gothic in modern times. "When the great quads are completed we shall, I think, confront a masterpiece."

Turning to other American colleges, Mr. Cram dealt first with Columbia University, New York—the noblest type of the pure Classical idea. There is little else that is purely classical among American Universities, though Carrère and Hastings have built a most engagingly Parisian Alumnae Hall at Yale, the Naval Academy at Annapolis is strictly French, and the University of California is growing on scrupulously Beaux-Arts lines afar on the Pacific Coast. Georgian, however, has established itself as a determined rival of the "Oxford Mixture," and some of its products are not only logical and lovely, but genuinely scholastic as well. Harvard is conscientiously following this line, and so is Williams. In Virginia, also, we are slowly constructing a great college for women, while we are using the same style for another of our oldest and most famous "preparatory schools" at Exeter as well as at yet another girls' college, Wheaton, in Massachusetts. Georgian also, with rather quaint Roman elements, has been used by McKim, Mead, and White for the vast War College at Washington.

"Cope and Stewardson's Wonderful Work."

The University of Pennsylvania shows still more of Cope and Stewardson's wonderful work, though here it is couched in an extremely rich Elizabethan vernacular, and the style is handled in a magnificent and competent fashion. Here it is all red brick and yellow stone, and the same materials are used in Mr. Day's beautifully proportioned and very reserved Gymnasium. Bryn Mawr is again built of the wonderful stone that underlies all Pennsylvania and New Jersey, putting a premium on good architecture. Here in England all building stone is finely dressed, but in America we have adopted the practice of using "ledge stone" for our ashlar, our trimmings only being tooled. Fortunately, we have a wide variety of singularly beautiful stones, ranging in colour through all shades of grey, brown, purple, and tawny, easily obtained, inexpensive, and durable. In a way I think we gain a richness in colour and texture that is obtainable in no other way, while we also acquire something of that effect of age which is, after all, so essential a part of architecture.

Washington University, St. Louis, is later work of the form of Cope and Stewardson after the latter had died, and, good as it is, it shows the loss of the peculiar poetry that marked everything Stewardson touched. At Chicago University the first buildings were distributed without any regard to architectural effect, and Shepley, Rutan, and Coolidge, in taking over the work, have been badly handicapped. This is the most archaeological of the "college Gothic" in America, accurate, conservative, and reserved. Mr. Post's "College of the City of New York" is as poetical, fantastic, and imaginative as the other is austere and cautious.

The Three Real Things.

The author, in commenting upon several other examples of college buildings, deduced from his examples that good Gothic is encroaching steadily on the preserves of Classicist, Boulevardier, and Colonial, and this in spite of the fact that, with the single exception of Harvard, every one of

our schools of architecture, absolutely disregards every type and phase of Gothic, both in design and in theory. Having shown several views of the United States Military Academy at West Point, the author concluded: "We do, indeed, indulge in skeleton construction, and reinforced concrete and other structural expedients, and substitutes, but deep in our racial consciousness, as in that of all other Anglo-Saxon peoples, is the solid conviction that after all there are but three real things in the world—the home, the school, and the Church—and that when we are dealing with eternal verities honest and enduring construction is alone admissible. And it is to the same consciousness I think that we may attribute the very universal return to Gothic of some form for our churches and our colleges and our schools. After all, there have never been but three real styles of architecture in the West, noble in impulse, organic in structure, perfect in detail, and these three are: Greek, Byzantine, and Gothic; everything else is either a patois or a form of slang. Greek and Byzantine are in essence alien to our blood and temper, and Gothic alone remains."

The photographs and drawings brought over by Mr. Cram to illustrate his paper will be on view in the Galleries of the Royal Institute until Saturday, June 1.

EARLY IRON MANUFACTURE.

At the meeting of the Iron and Steel Institute at which Sir Robert Hadfield, F.R.S., read the paper on the ancient origin of iron and steel from which extracts were given in last week's issue (p. 541), Sir Hugh Bell presented some "Notes on a Bloom of Roman Iron found at Corstopitum (Corbridge)." He said that according to an examination made by Dr. J. E. Stead the bloom measured 39 in. between the extremities of the metallic portion; its diameter at the widest part was 7 in. by 8 in., and at the smallest part 5 in. by 4½ in. It weighed 3 cwt. 8 lb., but as it was thickly coated with rust, and contained oxidised slag in the hollow upper part, also much imprisoned slag, the net weight of the metallic part was probably not more than 3 cwt. On close examination of the external surface there was evidence that the bloom had been built up and welded in sections as suggested by Professor Louis, as the terminations of some of the laps could be easily seen. In general terms, slabs approximately lenticular in section were employed. After the smaller end was made, the piece at this stage probably had a similar appearance and shape to the upper end of the bloom in the condition in which it was found in the furnace with projecting taper pieces. After forming the foundation piece, two slabs must have been inserted *vis-à-vis* and the mass then heated to welding temperature, after which it was removed and welded by hammering, but by what kind of implements there was no evidence. Step by step this process was repeated until the bloom of the size and dimensions as described was obtained, *plus*, of course, the portion which has been removed by subsequent rusting.

In a "Note on Some Remains of Early Iron Manufacture in Staffordshire," Professor Thomas Turner referred to lumps of iron, locally known as "ham bones," which were found round the site of an old forge at Little Aston. On analysis the sulphur content was ascertained to be ex-

tremely high, and the next most characteristic point was the very low carbon and silicon. The material was certainly not cast-iron. It might be assumed that the original "ham bones" were never really fluid, but that they were accumulations at the bottom of a furnace employed for the production or manufacture of wrought iron. Their shape clearly suggested that they were produced in the small hearth or bottom of a primitive furnace, as the projecting piece corresponded with a tapping or flowing hole. Apparently as soon as the accumulation at the bottom of the furnace reached the height of the tap hole, the process was suspended. The iron, rich in sulphur, was doubtless more fluid than the rest of the material; it was thus separated and collected in the bottom of the furnace.

Professor Henry Louis, speaking on the papers presented by Sir Hugh Bell, Sir Robert Hadfield, and Professor Turner, said that there was no direct evidence that the Romans knew cast iron, except as produced by accidental means. Even civilised nations were using direct-made wrought iron until about the year 1880, at which time it was being made direct from the ore in the Lake Champlain district of the United States. Whether the old Indian workers were acquainted with cementation was rather a doubtful point, but they did know how to make a steely iron, which gave results somewhat similar to cementation. He had had three micro-photographs taken from a small piece of direct made Indian iron, of about a quarter inch square, and they brought out the great difference in the carbon content, which was one of the most notable characteristics of direct made iron. The specimen shown by Sir Hugh Bell was no doubt made direct from the ore, probably from the ores in the coal measure of the district.

"THE GATE OF INDIA."

The visit to India of their majesties King George and Queen Mary aroused an enthusiasm among the people that has never been equalled. The genuineness of the sentiment may be measured both by the hearty participation of the nation in the festivals held on the occasion and the splendid character of the decorations that were displayed both in capital towns and in the interior. Bombay lived fully up to its motto, "*Urbs Prima in Indis*," in the matter of decoration for the occasion, and, among all the special structures erected by the Reception Committee, the most noteworthy was the temporary building raised on the Apollo Bunder, where their majesties landed in India. The design is by Mr. G. Wittet, consulting architect to the Government of Bombay, and is in the Indo-Saracenic style peculiar to the Presidency.

The building consisted of a light frame of wood covered with matchboard and finished with a coating of calico and lime-wash. The domes were framed in wood, covered with basket-work of split bamboo, and finished with a mixture of plaster and chopped coir fibre, which stood for four months in good condition, and even passed unscathed through a smart shower in December. This style of construction is found among the domes of some of the Cairo mosques that are framed in wood, lathed inside and out, and plastered with the mixture used for covering the flat roofs of the city. When properly done, this kind of dome lasts for many generations. The rainfall of Cairo averages about three-quarters of an inch per annum. The white surface of the building at the Apollo Bunder (or Bandar) was relieved by gilt mouldings and plaques, and illuminated at night by lines of red electric

lamps. Thousands of people came every evening to see the beautiful effect of the lighting. In the day-time the intense light of the Indian sun sufficed to give to the homely material all the effect of the purest marble. Their majesties expressed so much admiration for the structure that a movement was set on foot to reproduce it in permanent form in white marble. Estimates were made amounting to £52,228, of which the Government of India proposes to pay £19,998, and Sir Jacob Sassoon has contributed an equal sum, leaving £12,232 to be furnished by the local government and municipal and other corporations.

No position could be better chosen for the Gate of India. The site has been the place of landing and embarking of India's most distinguished men for many generations. It gives upon a harbour that is six miles wide, and beyond the opposite shore is the mountain range that forms the watershed of India.

Although India possesses ample deposits of marble, they are so far from the coast that the cost per cubic foot is greater in Bombay for the marble of Jabalpure than that of Italy.

An official notice to the Press states that the building must provide ample accommodation for any future ceremonies which may take place at the Bunder. Its general effect when seen from the sea must also be considered, and this will probably result in an increase in the height. A garden is also contemplated, which will adjoin the "Gate" and add to its attractiveness. The Gate of India will probably be built of armoured concrete, faced with marble, which will reduce the cost, decrease the weight, and take nothing from its artistic effect. The illustration is by Mr. Shushunkar Narayan, photographer to the School of Art, Bombay.

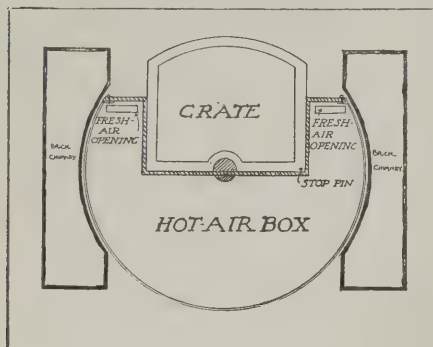


"THE GATE OF INDIA," ON THE APOLLO BUNDER, BOMBAY. G. WITTET, CONSULTING ARCHITECT TO THE GOVERNMENT OF BOMBAY.

ENQUIRIES ANSWERED.

Reversible Fireplace.

We have received a number of communications from readers in answer to the enquiry published under the above heading on page 479 of our issue for May 8th. It appears that an apparatus such as described by our original correspondent is manufactured both by the Falkirk Iron Company, of Craven House, Kingsway, London, and Messrs. J. and R. Corker, Ltd., of Rotherham. On request, these firms would doubtless be pleased to supply further information. A Swansea correspondent sends the illustration which we reproduce herewith of a reversible fire-



place for which the patent was taken out some years ago. It is not known whether this contrivance is on the market.

Question of Building Line.

SUBSCRIBER (Halifax) writes: "Most surveyors, I believe, in determining a building line, take a straight line between the buildings upon each side of a vacant plot. It was recently proposed to erect a new building between two others—one being set back 9 ft. and the other 35 ft. from the street front. The building line for the new structure had been settled at a distance of 20 ft. back, thus avoiding any encroachment upon the building line as customarily fixed. The clerk to the local sanitary authority, however, advised that, under Section 3 of the Public Health (Building in Streets) Act, 1888, the authority could insist upon the new building being set back to the level of the deeper building, namely, to a distance of 35 ft. Kindly give your opinion as to whether this can be legally enforced."

—Assuming that this building is not in a new street, with a building line set out a certain number of feet back, I am of opinion that the proposal to build 20 ft. back is entirely in order, and that the local authority have no powers to insist on the 35 ft. they apparently desire, as Section 3 of the 1888 Act reads: "It shall not be lawful in any Urban District, without the written consent of the Urban Authority, to erect or bring forward any house or building in any street, or any part of such house or building, beyond the front main wall of the house or building on either side thereof in the same street, nor to build any addition to any house or building beyond the front main wall of the house or building on either side of the same."

F. S. I.

Builder's Business on Co-operative Lines.

A CORRESPONDENT writes: "Kindly give your opinion as to the practicability of working a builder's business on co-operative lines."

—It is apparently practicable, because, according to statistics published by the Board of Trade, the number of co-opera-

tive Production Societies engaged in building as associations of consumers at the end of the year 1908 in the United Kingdom was sixty-eight, employing 1,569 persons and doing a sales turnover of £272,495. These were retail societies. In addition there were two wholesale co-operative societies engaged in building, employing 1,131 persons and with a sales turnover of £271,226. For the year 1909 the corresponding figures were seventy-three societies, employing 1,391 persons, turnover being £234,264 for the retail building. In the wholesale branch there were two societies, employing 1,154 persons and turning over £259,201.

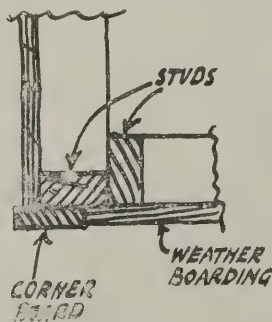
In addition to the above there were Associations of Workers in the building trade representing 107 associations, combined into six co-operative production societies, employing, in 1908, 211 persons and turning over £92,828, and in 1909 employing 186 persons and turning over £105,994. No detailed information is given as to profits earned, but in 1908 fifteen societies earned a profit of £3,609 on a turnover of £98,828, and in 1909 twenty societies earned £704 profit on a turnover of £105,994. As those two years are generally regarded as years of great depression in this trade, the results may be really more favourable than they look, as many building concerns made losses at that time and some large failures resulted.

A. G. W.

Weather-Boarded Cottage Construction.

B. P. (London) writes: "Can you refer me to any publication in which the details of construction of a weather-boarded, wood-studded cottage are explained? I want particularly to know how the external angles should be made. Kindly name examples of such work, old and new, near London."

—Full particulars and details of frame-houses are given in "Building Construction and Superintendence," Part II., by F. E. Kidder, published by W. T. Comstock, of New York, and obtainable from B. T. Batsford, High Holborn, price 20s. In the best work a solid post would be used on each external angle—say a 4 in. x 4 in. where the ordinary sheds were 4 in. x 2 in.—but in simple or unimportant work the angles may be made up of two 4 in. x 2 in. as



sketch. A vertical board is nailed up each angle as shown, against which the weather-boarding stops with a butt joint. Such boards are usually about 4 in. wide and sufficiently thick to stop the weather-boarding without projection. As to examples, there are numerous old buildings in Essex showing this construction. Modern examples near London are scarce owing to by-law restrictions. Mr. F. Troup built a very successful weather-boarded cottage at Letchworth in the first exhibition there, and this, presumably, is still to be seen.

G.

Insulating Material for Hollow Wall.

AILSA writes: "What is the best insulating material with which to pack either a hollow wall or a framed partition for the purpose of forming an effective cold-storage chamber? I have used slag wool packed tightly with fairly satisfactory results, but would like to know of something better."

—Short of actual brine circulation, I know of no more effective insulation than slag wool. That material should not, however, be "packed tightly." It should be compactly filled into the spaces by light hand pressure. If rammed tight the fibres are broken and the air expelled, reducing the insulating power.

G.

Dry-rot in a Country House.

G. and B. (Hereford), write: "We have had to inspect and report recently on an outbreak of what was supposed to be dry-rot in a large country house. As a result of our examination, we found one piece of rotten skirting in a first-floor room. This was fixed against an outside wall exposed to the south-west, and the decay extended for about six feet along the skirting. We send you samples of this skirting, and may say it has been in this state for years, though the rot has not spread to the floor-boarding, joists, or other woodwork in the vicinity. Another instance has been found in one of the wine cellars, where the woodwork was extremely wet and rotten; but the symptoms of dry-rot, such as fungus and a peculiar smell, were not present."

—The portion of rotten skirting submitted does not present features which conclusively determine whether the decay was due to dry-rot—that is, to the action of the fungus *Merulius lacrymans*—or to wet-rot, but there is a strong probability that it was due to the former. The position of origin, against an exposed outside wall behind the skirting, whose varnished surface prevents the wood from drying out into the room, is just such a situation as would assist the germination of dry-rot spore. The character of the decayed wood assists the same conclusion. There is, however, no sign of the fungus; but that is hardly to be expected since the skirting is said to have been in its present state for many years; and, at the most, it can originally only have been a slight attack. It does not follow that dry-rot fungus once started is bound to spread. Unfortunately, it very often does, and that, too, with the most disastrous consequences; but the fungus is amenable to the laws of plant growth, and will not continue to flourish if the surroundings cease to be favourable. It is equally certain that, if it has once died, it cannot start again when the damp surroundings return. But it may, during its life, have formed a fructification, and in that case left many tens of thousands of spores behind it, each one of which is capable of continuing the work of destruction. In the present case it appears likely that the fungus has been of limited growth and then died out, and that either the wall has since become dry or that there has been no second spore to produce a successor. The circumstances, however, are probably still congenial to the growth of any spore that may chance that way, and it would be better to leave the exhausted wood in position than to place new wood to form the food of a future growth, unless the damp condition of the wall is remedied. This may be effected by washing the exterior with three coats of Szerelmey's stone-preserving fluid, applied when the wall is as dry as it is likely to

be, or by adopting Musgrave's K system to dry the wall first before the fluid is applied. In any case, every portion of the decayed wood should be removed and burned, and no wood plugs should be used for fixing the new skirting. Alternatively, the skirting may be worked in cement, and after it has thoroughly seasoned it may be painted to match the rest of the skirting. A wash of antiseptic on the wall, which should be allowed to dry out again before the new wood skirting is fixed, would be a wise precaution. B.

THE "PERMUTIT" SYSTEM OF WATER SOFTENING.*

BY DR. JOHN F. MEYER.

As far back as 1756 the natural zeolites are first described in the "Transactions" of the Academy of Sciences at Stockholm; but it was not until 1850 that Theodor Way, consulting chemist to the Royal Agricultural Society in London, established the fact that the zeolites placed in contact with salt solutions were capable of absorbing the bases contained in the dissolved salts, at the same time yielding up into solution the bases which they themselves contained. The author repeated one of Way's experiments:—In this small glass filter, he said, you see a layer of natural zeolites; for convenience I took fuller's-earth. I will pass through it a water of 10 deg. hardness, and as you will see from the test I now make the hardness of the

filtered water has been reduced. The following reaction took place: The bases contained in the hard water, calcium and magnesium, have been absorbed by the zeolites, and the latter have given up their own bases (sodium) to the water. This experiment explains to a certain degree why a soft water of perhaps 7 deg. is very often found at a depth of, say, 500 ft., while at a depth of 100 ft. the hardness of the water out of the same borehole is 50 deg. The explanation is that rain water passing through a stratum of limestone, and thus becoming hard, afterwards passes through a layer of these natural zeolites, whose softening action you saw just now.

Dr. Gans, Professor at the Mining Academy of Berlin, and president of the Laboratory of Geonomy at the Berlin University, made a thoroughly scientific research of the natural zeolites, classified them, and published the constitution formulæ. Ultimately Professor Gans succeeded in producing zeolites artificially, and took out a patent to manufacture artificial zeolites on a commercial scale in the year 1906. He named his artificial zeolites "Permutit" from the Latin "permutare," to exchange. The author here conducted a series of experiments, disclosing the whole Permutit process for water softening down to 0 deg., and the procedure of regeneration, and exhibited two drawings showing different types of a Permutit water-softening plant—gravity and pressure.

The permutited water effects the largest possible saving in those industries or places where soap is used. Permutited water is further an excellent water for drinking.

A further phase of the Permutit process is the manganese permutit, manufactured by precipitating heptoxide of manganese

on a permutit by permanganate of potassium. If I pass a water which contains iron or manganese through this filter all the iron and manganese salts will be oxidised and kept back in the permutit. The regeneration of the filter takes place by using a solution of permanganate of potassium. These manganese permutit filters work excellently in those cases where every trace of iron and manganese has to be taken out of the water, and further to eliminate organic matter. Another application of the manganese permutit filters is to sterilise waters which contain harmful germs. Since these plants can be worked at a high rate of filtration, the initial and working costs are very small, the working costs being about $\frac{1}{8}$ d. per 1,000 gallons of water treated.

DETAILS OLD AND NEW—XLII.

Woodwork in Pembroke College Chapel, Cambridge.

The present chapel of Pembroke College was built by Bishop Wren after his release from the Tower, the architect being his nephew, Sir Christopher Wren. Most of the woodwork is the same that was originally set up, including the carved cartouches, swags, and capitals, which are executed in some variety of oak. There is a range of stalls on either side, and two returning on each side of the door below the organ screen at the west end (of which the view on p. 559 is a detail). From the building accounts it appears that the woodwork was done by "Cornelius Austine and Richard Billopps and William his sonne of Camebridge, Joyners." The chapel was dedicated on September 21st, 1664.

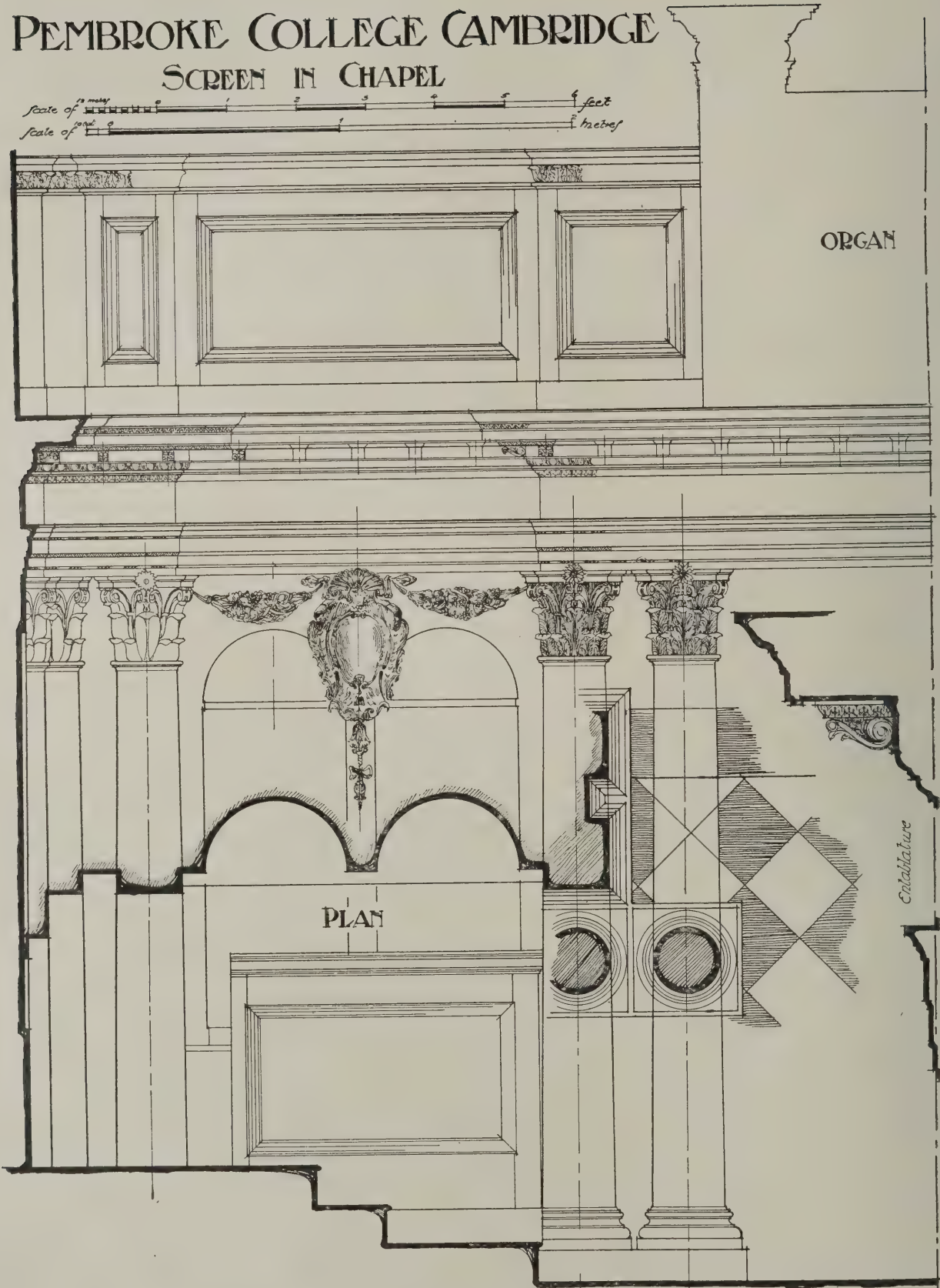


PANELLING BEHIND STALLS IN PEMBROKE COLLEGE CHAPEL, CAMBRIDGE.

* Extracts from a paper presented at a South Eastern District meeting of the Institution of Municipal Engineers on May 22nd, at No. 4, Southampton Row, W.C.

PEMBROKE COLLEGE CAMBRIDGE

SCREEN IN CHAPEL



ELEVATION OF STALLS AND SCREEN

MEASURED AND DRAWN BY FRANK T. DEAR.

THE QUANTITY SURVEYORS' ASSOCIATION.

Annual Dinner.

The annual dinner of the Quantity Surveyors' Association was held on May 20th in the Connaught Rooms, Great Queen Street, W.C., the President, Mr. C. W. Ball, M.S.A., being in the chair. Among those present were the Right Hon. the Lord Mayor of Leeds; Messrs. George Corderoy, F.S.I.; A. A. Hudson, K.C.; H. P. Bulnois, M.I.C.E.; Alfred W. S. Cross, M.A., F.R.I.B.A.; S. Chatfeild Clarke, F.S.I.; T. Sidney Vickery; H. M. Hodgson, F.S.I.; G. L. Brighton, F.S.I.; Henry Northcroft, F.S.I.; H. H. Bartlett; H. A. Bartlett; W. R. Hood, F.S.I.; F. G. Rice; Dudley Bartlett; James Wright; Henry Riley; Walter Lawrence; J. Carmichael; T. Costigan; T. P. Figgis, F.R.I.B.A.; Alan E. Munby, F.R.I.B.A.; A. Needham Wilson, F.R.I.B.A.; T. J. Careless; Arthur G. Cross, F.S.I., and many others.

At the conclusion of the dinner, the toast of "The King" having been observed,

The Right Hon. the Lord Mayor of Leeds (Mr. William Nicholson), proposing the toast of "The Quantity Surveyors' Association," said the absolute necessity for such an Association as theirs was manifest if they were to get a living wage and keep their heads above water. Unfortunately, in the North of England, it was a prevalent practice of the architects to take off their own quantities. He said without hesitation that this was not right. In building, the indispensable units were a good builder, a skilled architect, and an experienced quantity surveyor. The County Councils were sweating the quantity surveyor, but the municipalities, he understood, were not even employing him, a state of affairs which it had been his constant endeavour to correct. Having drawn a distinction between the functions of the architect and the engineer, the speaker said that, on behalf of the contractors, he would say they had to look forward to dearer prices. What with current legislation, strikes, the increased cost of labour and its lessened degree of production, the prices of to-day would not pay for the work. The old rates would do no longer; they would have to be revised. In conclusion, he wished every success to the Quantity Surveyors' Association.

The President, in reply, said that when the Council did him the honour of electing him president he suggested three things which he wanted to be brought about during his year of office. The first was a conversazione. This was duly discussed, but the proposition was lost. The second was a visit of the Association as a body to his own town of Portsmouth. Circulars were sent out to members; but the response was disappointing, and the proposal fell through. The third was the establishment of the benevolent fund upon a satisfactory basis. This had been quite successful, for instead of the £46 for which he had asked £78 had been subscribed in response to his circular letter. With regard to the Association, the principal event of the year had been the creation of a new Associate class of member. Members of this class had to be twenty-two years of age, and had to pass an examination giving evidence of training, experience, and capacity, and although this arrangement had only just come into force they had admitted many new Associates who, in due course, would become full members.

They had also passed a new by-law by which it became an offence for a member to do work within a value of £70,000 at less than the schedule scale of charges. They had not issued a third pamphlet on the standardisation of measurement, but a sub-committee had been formed to discuss the matter with the Surveyors' Institution. The matter was being thoroughly considered, and it would be premature to say more than that. They now possessed a presidential badge, and he had the honour of being the first president to wear it. The names on the bars which already adorned it were: W. Lawrence, A. J. Gate, W. R. Hood, Arnold E. Harris, H. T. Chidgey, and Chatfeild Clarke. Presidents, he continued, might come and go, but their honorary secretary, like the brook, went on for ever. They valued the services of Mr. Cross very highly. Without him he did not believe their society would go on and flourish as it did at the present time. There had been a considerable increase

in membership, and several of the leading surveyors, he was glad to say, were joining their society.

Mr. H. M. Hodgson, F.S.I., proposing the toast of "The Architects," said the more they knew of architects and the more of them they knew the better they were pleased. The mere surveyor needed some temerity to speak on architecture in the presence of architects. If surveyors had any preference in architecture it was for a severe, formal, Classic style. The "restless" style, which was often referred to in architectural circles, seemed to the quantity surveyor to be pure cussedness; it doubled his work without increasing his fees. The three R's of the quantity surveyor would be regularity, rectangularity, and repetition. The design which looked most simple on plan always worked out best; they put this down to a merciful dispensation of Providence and not to an attempt of the architect to save the quantity surveyor's labour.



DETAIL OF WOODWORK IN PEMBROKE COLLEGE CHAPEL, CAMBRIDGE.

Mr. A. W. S. Cross, M.A., F.R.I.B.A., responding in the absence of Mr. J. Dixon Butler, said that, having been called upon unexpectedly, he was quite unprepared with a speech, and he was in the position of having to clothe non-existent ideas in words which failed to come to his mind. He hoped to see the extension of their Society's sphere of influence. The quantity surveyor was indispensable to the architect, especially when the builder's bill of extras loomed large on the horizon. There was undoubtedly a real bond of sympathy between the two bodies, and he hoped it would be maintained.

Mr. Henry Riley proposed the toast of "The Contractors." They had, he said, to work with a host of specialists, and their task was becoming increasingly difficult. No other industry was so likely to be badly affected by strikes.

Mr. H. Arthur Bartlett, President of the Institute of Builders, in reply, referred to the threatened strike in the

VICISSITUDES OF A STATUE.

Alfred Gilbert's bronze statue of Queen Victoria at Winchester, unveiled recently by Princess Henry of Battenberg, has seen strange vicissitudes. In 1887 the late Mr. W. Ingham Whitaker, of Pylewell Park, Lymington, was High Sheriff of Hampshire, and to commemorate the first Jubilee he offered to present to the county a statue of Queen Victoria. His desire was that it should be in marble and be placed in the ancient Great Hall of the Castle, where Kings of England had sat in state, where Parliament had met, and where historic trials had been held. The Court of Quarter Sessions accepted the offer, but declined to allow the statue to be placed in the Hall. A site on Castle Hill outside the Hall was offered and accepted, and the material of the statue was changed from marble to bronze. Gilbert produced a design which at once attracted the attention

against the position in the Abbey Gardens. They pointed out that the statue was more suited for an indoor light than out of doors, and recommended that it should be placed in the Castle Hall, beneath the Round Table of King Arthur. Mr. W. Ingham Whitaker, the son of the donor, then came forward and offered to take such steps as were necessary to complete the statue, provided it were placed in the Castle Hall, as intended by his father and the sculptor. The offer was accepted and orders were given for the removal of the statue from the Abbey Gardens, where it had been located for fourteen years. About a month ago the finishing touches were put to the work, the last being to affix to the medallions on the socle minute nude figures bearing a scroll with the name "Victoria." These were recently designed by Mr. Gilbert, who has worked with enthusiasm on the finishing of his masterpiece, which has thus come triumphantly through its extraordinary vicissitudes.



HIS MAJESTY'S THEATRE, MANCHESTER: SCULPTURED PANEL (23 FT. IN LENGTH) FOR FACADE.
HORACE FARQUHARSON AND RICHARDSON AND GILL, ARCHITECTS.

London building trades. They were meeting the men, he said, and trying to find a middle course, so as to avoid the strike and its consequent interference with trade. Nowadays, he continued, the man who could take the highest figure off cost price before sending in a tender was the one who got the job. To illustrate the extent of specialisation, Mr. Bartlett mentioned a case where even the excavations had been given out to a specialist. Architects always demanded the very best of everything; he had never seen a bill of quantities asking for second-quality materials. These did exist, but he had never seen them specified; he wondered what became of them.

Mr. S. Chatfield Clarke proposed the toast of "The Visitors," to which Mr. George Corderoy replied.

Mr. A. A. Hudson, K.C., then proposed the health of Mr. Arthur G. Cross. Mr. Cross made a brief reply.

New Park for Bury St. Edmunds.

The Bury St. Edmunds Town Council has agreed to accept an offer of the historic Abbey grounds of thirteen acres for a public park and recreation ground from the Marquess of Bristol on a twenty-one years' lease at £100 per annum.

of the world of art, the statue was set up in its place, and the Duchess of Argyll (then Marchioness of Lorne) unveiled it. Subsequently the idea prevailed that it was in the way, and it was thereupon removed, placed in a corner of the Castle yard, and covered with a tarpaulin. Mr. Gilbert was naturally indignant at the treatment of his work, and declined to finish it.

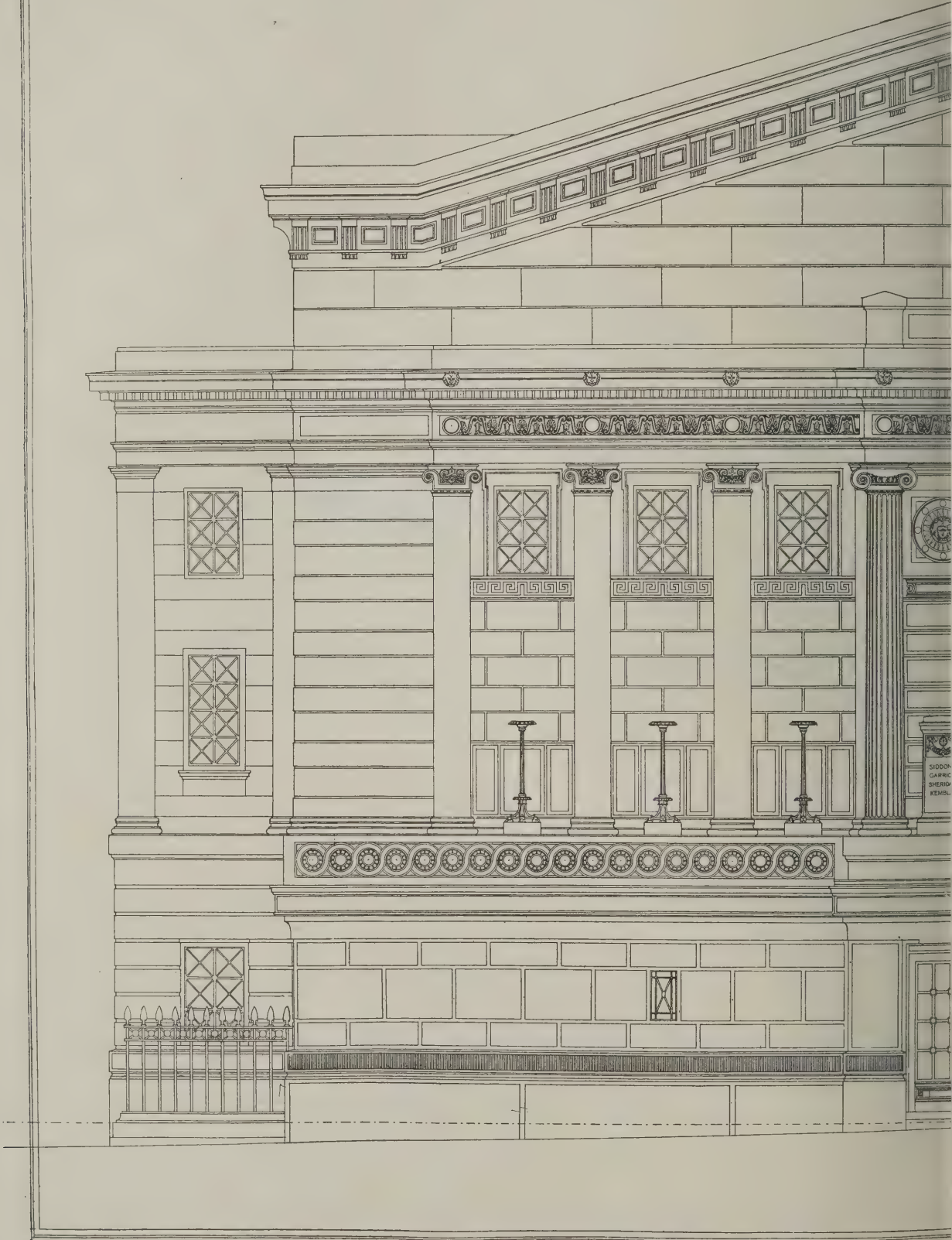
In 1893 the late Earl of Northbrook, then Lord Lieutenant of the county, arranged to place it in the Abbey Gardens. The statue was placed in a position facing north, so that the sun never shone on its face; thus it always appeared a black mass and the exquisite detail of the work was lost. The effect of the atmosphere on the bronze turned it to a greenish-black colour, and altogether its fate did not seem to have improved. Later, when the Alfred Milenary was celebrated, the gigantic statue of King Alfred, on its lofty granite monolith, was placed only a few yards away, and the contiguity of the great statue had the effect of dwarfing that of Queen Victoria and giving it a squat appearance. A proposal was then put forward by the late Rev. G. A. Seymour to erect a canopy over the statue. The President of the Royal Academy and Mr. T. G. Jackson, R.A., however, reported against this proposal and

HIS MAJESTY'S THEATRE, MANCHESTER.

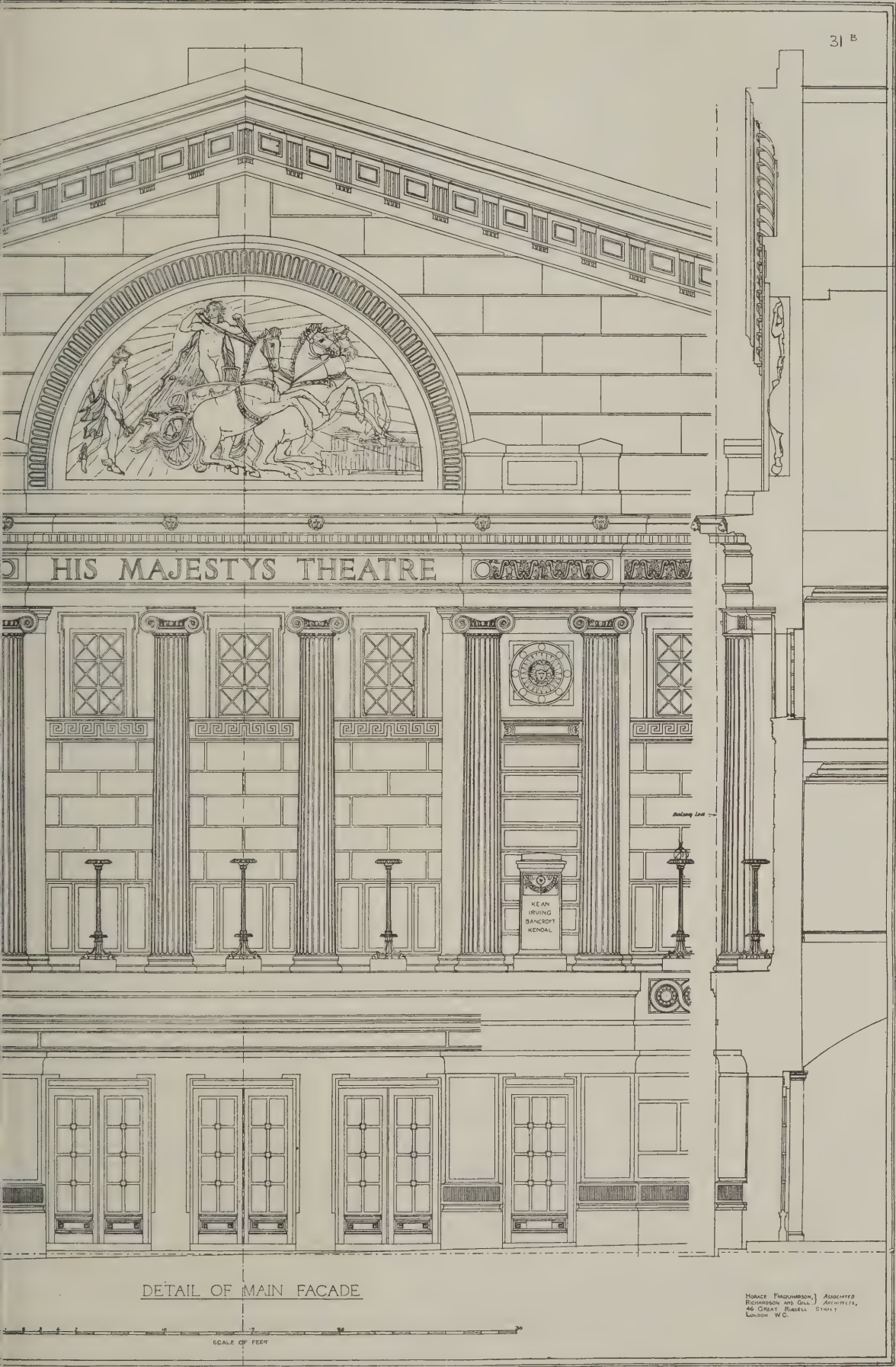
The accompanying illustrations show the detail of the front elevation of His Majesty's Theatre, Manchester, which building is now in course of erection and will be completed in the course of the next four months. From the drawing reproduced it will be admitted that the design is an admirable one, and the architects (Messrs. Horace Farquharson and Richardson and Gill) are to be congratulated on what promises to be the most scholarly and dignified theatre erected in this country within the last half-century. The sculptured panel illustrated on this page has been modelled by Messrs. John Tanner and Sons, of Westminster, from the architects' design and represents "The Dawn of the Heroic Age." It is being carried out, like the rest of the front, in "Ferrocon" (artificial stone). Some excellent plaster-work has been designed for the interior by the architects and executed by Messrs. John Tanner and Sons, the detail being Neo-Grec in character with abundance of vigour: in which particular it is notable, when compared with the detail usually found in theatres.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

HIS MAJESTYS THEATRE MANCHESTER



HORACE FARQUHARSON AND RICHARD



31^B

DETAIL OF MAIN FACADE

SCALE OF FEET

HORACE PARQUHURSON, ASSOCIATED
RICHARDSON AND GILL, ARCHITECTS,
40, GREAT RUSSELL STREET,
LONDON W.C.

LIBRARY
OF THE
UNIVERSITY OF ALABAMA

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Office of Works Architects.

Mr. Snowden, in the House of Commons last week, asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, if it was his intention to see his undertaking of December 7th last in that House, that the desires of all the class termed architectural assistants should be ascertained with a view to placing them upon the establishment list, carried into effect.

Mr. Wedgwood Benn referred Mr. Snowden to the reply he gave on the 6th inst. in answer to a similar question. (The reply has been published in THE ARCHITECTS' AND BUILDERS' JOURNAL.)

Mr. Snowden observed that the reply was no answer to his question. He proceeded to ask another question in the following terms:—Whether, up to and including the year 1903, the class termed architectural assistants, formerly senior draughtsmen, engaged in his Department performed all the professional duties, and with the ability now expected, of the assistant architects, consisting of the charge of one or more contracts with the preparation of all the design and construction plans directly under the architects; or what class did perform those duties at this period, seeing that the total number of the class termed assistant architects numbered only eight, who were engaged in nearly every instance upon official routine, and that the amount of the architectural work in the Department was within 80 per cent. of the total amount at present, but that the total number now was forty-six; whether he was prepared to aver that the professional abilities exhibited in the exercise of these duties by the architectural assistants were not equal to those exhibited now by the class termed assistant architects; and why, since that period, numbers of junior draughtsmen had been established to take over these duties formerly satisfactorily performed, thus causing grave dissatisfaction to the architectural assistants.

Mr. Wedgwood Benn said the answer to the first part of the question was in the negative. In reply to the second part, the honourable member was mistaken in his figures. There were thirty-one assistant architects in 1903. There were now forty-nine. Of temporary men there were about 120 in 1903, and there were about 216 now. As regards the third point, the architectural assistants had, in the majority of cases, had the opportunity of competing for permanent posts, and had either not availed themselves of it or had failed. As regards the last point the establishment had since 1902 been recruited by competitive examination of members of the unestablished staff.

Mr. Snowden asked whether the titles of the two classes engaged in the Department, architectural assistants and assistant architects, were upon professional grounds one and the same; whether the professional diplomas held by both classes were equally distributed, the number of associates and licentiates of the Royal Institute of British Architects in the architectural assistants' class being twenty out of a total of fifty, and that of the assistant architect class eighteen out of a total of forty-six; whether the services rendered by both these classes were one and the same; and whether both these classes were equally certificated, the one class holding the technical certificate of the Commissioners of the Board of Works and the other class that of the Com-

missioners of the Civil Service; and would he therefore see that the Civil Service rule of equal reward for equal class conditions was in this case observed by establishment and remuneration?

Mr. Wedgwood Benn said there were nineteen associates of the Royal Institute of British Architects among the assistant architects and eleven among the architectural assistants. There were also two licentiates among the former and twelve among the latter. The associates and licentiates were, of course, not upon the same footing. The answer to the third part of the question was in the negative, and to the fourth, that the two certificates were not in any way equivalent.

Mr. Snowden asked if the hon. member would take the necessary steps to prevent the present established architects' staff termed assistant architects from being increased by the present method by members of the junior unestablished staff, termed draughtsmen, by examination or otherwise, until the services of every member of the present certificated senior unestablished staff, termed architectural assistants, had been fully utilised by establishment and remuneration as those in a similar professional position, classed as assistant architects.

Mr. Wedgwood Benn said the First Commissioner regretted that he was unable to give the undertaking required.

Mr. Snowden asked whether the designs and the necessary constructive documents constituting the basis of the building contracts formerly in the sole charge of the class termed architectural assistants directly under the chief of the branch were being now taken from them, thus reducing their position to a subordinate one, and handed over to a class junior to them in age and service and termed assistant architects of the second class; whether the resulting friction occasioned by this action was hampering the progress of the work of the Department; and would the hon. member give instructions that the original express conditions of service in this and other respects of the architectural assistants be reverted to.

Mr. Wedgwood Benn said the points raised had been practically dealt with in previous questions. The growth of work had rendered necessary the increase of the permanent staff in order to relieve the architects by devolving a certain amount of the work on the assistant architects. No instance of friction hampering the progress of the work of the Department had been brought to the notice of the First Commissioner, and no instructions were needed for any change in the current procedure.

Dublin Post Office.

Mr. H. Samuel, Postmaster-General, has informed Mr. Field that proposals involving the rehousing of several departments of the Post Office at Dublin have been under consideration for some time, but they are not yet sufficiently advanced to enable the Postmaster-General to form an estimate of the probable cost or to fix any date for beginning the works.

New Bridges Across the Thames at Reading.

The Reading Town Council decided last week to erect two bridges over the Thames between Reading and the newly incorporated area of Caversham. It is estimated that the cost of the schemes will be £65,000. One bridge is to replace the existing Caversham Bridge, and towards the other a Caversham ratepayer has contributed £5,000.

ILLUMINATING ENGINEERING
SOCIETY.

In the report of council for the session November, 1911, to May, 1912, of this society, it is stated that during the past year the society has been fortunate in extending its influence in many directions. Meetings have been devoted mainly to securing the co-operation of the general public, and many subjects of great interest have been discussed. A marked feature of the past session has also been the consolidation of the international position of the society, which is now coming to be regarded as the European centre of information on matters connected with illumination.

The development of public interest in illumination and the increased output of literature on the subject have again been most remarkable. It is particularly satisfactory to observe the direct interest taken by the daily Press in the practical consequences of insufficient illumination. This has taken the form of frequent references to such matters as street lighting, the influence of illumination in mines on the eye-sight of miners, the lighting of the House of Commons, etc.

The number of members of the society now exceeds 340—an increase of seventy over the number at the corresponding period of last year. Architects, surveyors, etc., make up five per cent of the membership.

The society has added to its list of vice-presidents the names of Sir William Abney, D.Sc., F.R.S., C.B., Prof. A. F. Kenelly, and Prof. Elihu Thomson, and has also nominated its President (Prof. S. P. Thompson, D.Sc., F.R.S.) one of the honorary life members for the present year.

The joint committee—on which representatives of the Institutions of Gas and Electrical Engineers, the Association of County and Municipal Engineers, and the Illuminating Engineering Society are nominated—is still engaged on its task of preparing a draft specification for street lighting. A considerable number of meetings have been held, and much valuable data collected, and it is anticipated that its findings will be available shortly.

The joint committees on school and library lighting decided upon at the conclusion of the discussions of the society on these subjects at the commencement of last year have now been constituted. Representatives of the Library Association, the Association of Medical Officers in Schools, the Association of Technical Institutions, the Association of Teachers in Technical Institutions, and the London Teachers' Association have been appointed, and are taking part in the proceedings. Several meetings have already been held, and the committees are preparing some suggestions which, it is hoped, will prove of considerable use to those concerned with the lighting of schools and libraries. In addition, it is proposed that these committees will act as a permanent centre for information on these subjects.

It will be remembered that at the International Electrical Congress in Turin, last September, the following resolution was passed: "That this Congress deems it desirable that an International Commission should be appointed in order to study all systems of lighting and technical problems in connection therewith; and, having been informed that the Illuminating Engineering Society of London has the intention of forming such a Commission and of putting itself in touch with the other existing

national and international photometric committees, approves their taking the initiative in this respect." A resolution was also passed unanimously by the Electro-technical Commission affirming "that the National Committees should co-operate with the Illuminating Engineering Societies in their respective countries in studying the question of symbols, nomenclature, and other matters relating to illumination."

By this resolution, it is observed, the support from the electrical industry throughout the world has been secured, and it is hoped to obtain similar international encouragement from the gas industry.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief, and to write on one side only of the paper.

The R.I.B.A. Elections.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—If any justification were required for the circular issued by the Institute Members' Club, the letter signed "A Fellow of the Institute" in your last issue would supply it. This gentleman would have the R.I.B.A. deliberately stultify itself, and he has no notion whatever of the effect such a proceeding would have in the provinces, where our brethren are anxiously awaiting some tangible outcome of the policy to which the Institute is solemnly pledged. If those who suffer from unfair competition looked with some alarm on the House List issued by the Council, they are more than justified in taking steps to safeguard themselves against those who, like your correspondent, are oblivious of definite obligations. I imagine anti-Registrationists will hardly thank "A Fellow" for his injudicious letter.

AN ASSOCIATE OF THE INSTITUTE.

Mystic Board of Trade Returns.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Traders are asking how it is that, according to the Board of Trade returns, the trade of this country is going up by leaps and bounds. Each month you see larger returns published, and people are mystified, especially those in the building trade, which trade has been declining ever since the Boer War commenced.

Recently we have been fixing up a Canadian agency for "Pudlo," which makes cement waterproof, and of which I am the sole maker. I find that there is a preference given to English-made goods. For instance, in Canada there is a duty of 25 per cent. on English-made goods, whilst on foreign-made goods the duty is 35 per cent. I find that the Germans and many other foreigners send produce to England, and then re-ship it to our Colonies in order to gain the preferential tariff, which in some cases is rather a considerable amount. Now, as this preferential tariff is of comparatively recent origin, it is to be expected we shall continuously import and export larger quantities of all kinds of goods.

I thought this matter might interest your readers, and I am sure it will interest many hundreds of my customers, who have many times expressed their wonderment at trade returns showing such prosperity while our trade is so very slack.

J. H. KERNER-GREENWOOD.

King's Lynn.

NEWS ITEMS.

A Business Announcement.

Messrs. Vulcanite, Ltd., have acquired the business of Messrs. Watson and Co., Brentford, whose "Reliance" lead and bitumen dampcourse, and other bitumen and asphalte specialities, will in future be manufactured at Messrs. Vulcanite's own works. All inquiries and orders should henceforth be sent direct to Messrs. Vulcanite, Ltd., at their offices—118, Cannon Street, London, E.C.; Laganvale, Belfast; or Westinghouse Road, Trafford Park, Manchester.

Tattershall Castle Fireplaces Recovered.

With the assistance of a number of generous lovers of antiquities in the County of Lincoln and elsewhere, Earl Curzon of Kedleston has recovered the famous carved stone fireplaces, dating from the fifteenth century, which were taken out of Tattershall Castle last year. The work of restoring the castle and its surroundings to their former condition, so far as it can properly be done, has already been commenced by Lord Curzon and as soon as this work is sufficiently advanced the fireplaces will be restored to their original position. It is estimated that the restoration at Tattershall will not be completed until next year, when Lord Curzon proposes to place it on view to the public.

Sewer Gas Consumed in Lamp Standards.

An apparatus for the consumption of sewer gas, invented by Mr. William Rodger, burgh engineer, Dunoon, and fitted to one of the public lamps in the burgh, has in the interior of the lamp a combustion chamber in the form of a two-part cone. The lower portion of the cone is carried through the base of the lamp head and connected to the upper part of the lamp standard, the upper part of the cone being designed to fit the lower portion and also the upper portion of the lamp head. In the interior of the upper portion of the cone there is fitted a baffle plate, and below this there is a Bunsen or other suitable burner fed from the main gas supply through a by-pass, so that the Bunsen is kept lighted even when the supply to the illuminating burners is cut off. The sewer gas is led from the sewer to the lamp standard, and passes upward into the cone, being burned partly below and partly above the baffle plate.

New Municipal Works.

The Local Government Board has decided to hold, or has recently held, as the respective dates indicate, inquiries into proposed expenditure by public bodies as follows:—Water supply works.—Bideford Borough Council, £19,300 (May 29th); sewerage, sewage disposal, drainage.—Lower Babington Urban District Council, £1,150 (May 28th); St. Helens Borough Council, £18,000 and £9,000 (May 31st); Ongar Rural District Council, no amount stated (June 4th); street improvements, recreation grounds, etc.—Hendon Urban District Council, £2,562 (May 30th); Tiverton Borough Council, £3,350 (May 30th); Brighouse Borough Council, £4,125 (May 31st); Devonport Borough Council, £4,559 (including quay walls) (May 31st). Various.—Kettering Urban District Council, £2,600, for art gallery and £2,100 for corn market (May 28th); West Riding County Council, £32,000 for county hall extension at Wakefield (May 29th); Congleton Borough Council, £1,700 for gas under-

taking (May 30th); Heywood Borough Council, £11,000 for ditto (May 31st); Keighley Borough Council, £6,576 for electricity undertaking (May 29th); York City Council, £9,700, for ditto (May 30th); Heywood Borough Council, £2,500 for ditto (May 31st); Brighouse Borough Council, £3,000 for ditto (May 31st).

Rural Housing.

At the annual meeting of the Rural Co-partnership Housing Association, which was held at 53, Grosvenor Street, W., last week, Lord Henry Bentinck, M.P., who presided, said that the wages of the agricultural labourer were so small and the housing accommodation so bad that there was no wonder he preferred to go into the towns, and so accentuated labour troubles. Co-partnership had done a wonderful amount of good in connection with town planning, and they were thankful that somewhat similar principles were now being carried out on intelligent lines in rural areas. Mr. J. St. Loe Strachey (editor of the "Spectator") suggested that many of the difficulties in the provision of cheap and good houses for rural areas would be overcome if by-laws were abolished and in their place it was arranged that certificates of fitness for habitation should be given. People ought to be able to experiment in the building of cheap houses, but in most districts the by-laws prevented this being done.

OUR PLATE.

The Temple of Ipramboul.

The fine drawing by Mr. A. C. Conrade, reproduced as the Centre Plate in this issue, is a restoration of the entrance hall of the rock-cut Temple of Ipramboul, Egypt. This entrance hall has eight colossal figures, 33 ft. high, standing against square piers at the sides. In the distance is seen the inner sanctuary, with three seated gods (there is a fourth, not visible from this standpoint). The figures on the side walls wear the head-dress known as the "corn-measure," and carry the crook and scourge as emblems of power. The ceiling is covered with paintings.

R.I.B.A. DESIGNS FOR FINAL EXAMINATION.

The Board of Architectural Education of the Royal Institute of British Architects announce that the designs submitted by the following students who are qualifying for the Final Examination have been approved:—

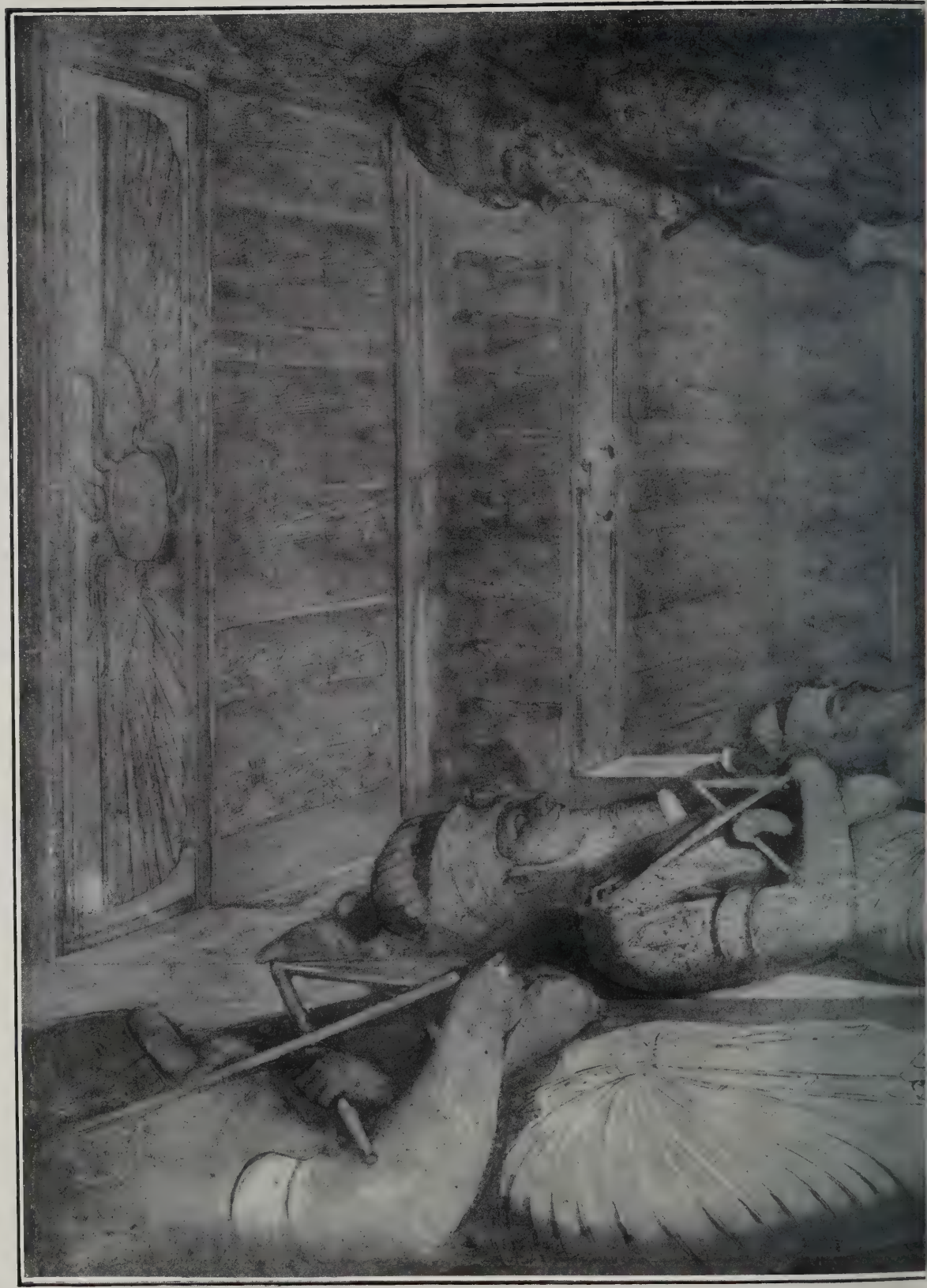
Subject I. (a).—(A large Monument to commemorate King Alfred's refounding of London.) H. A. Dod, Hal Harper, Ernest Prestwich, H. C. Bradshaw.

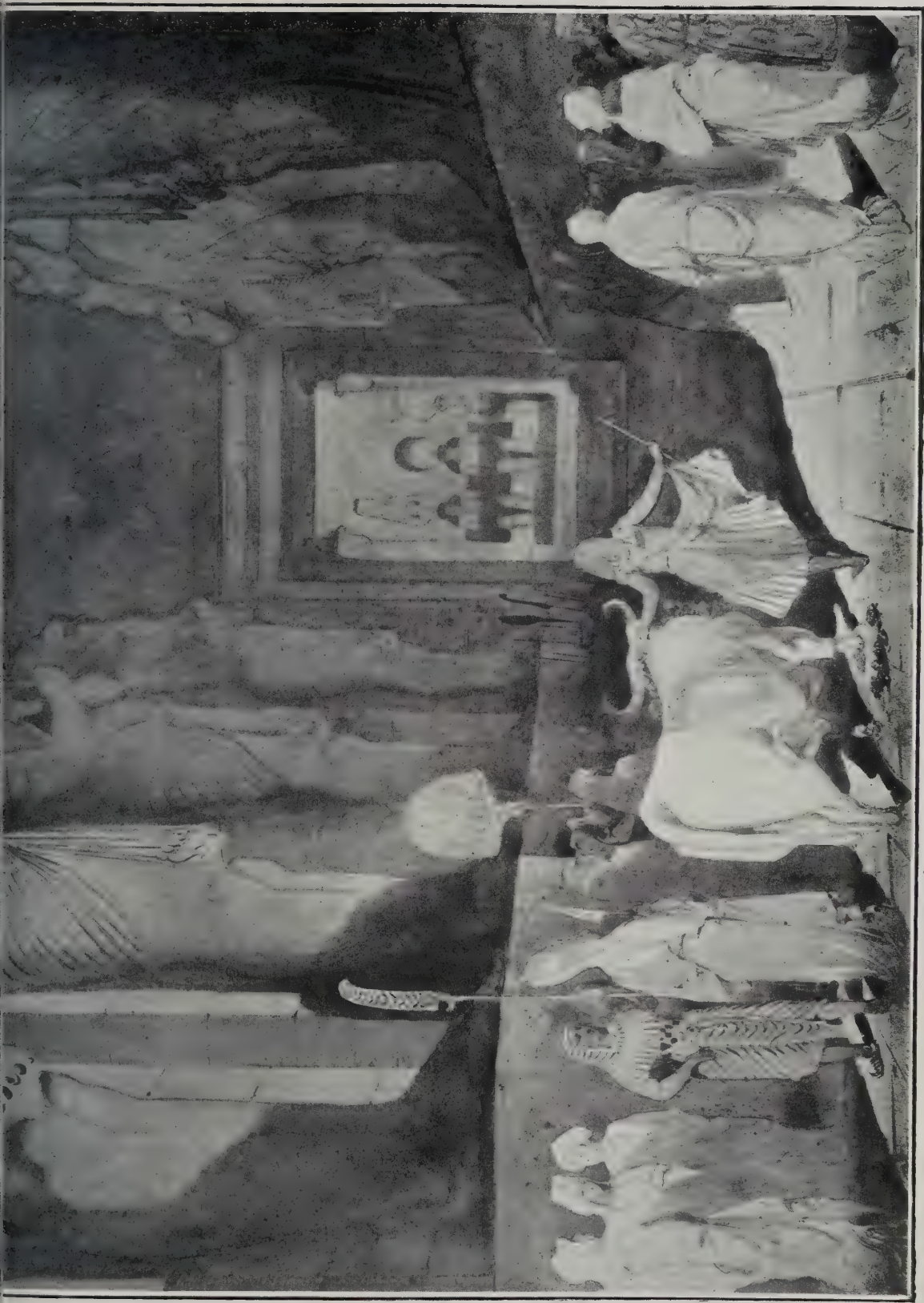
Subject I. (b).—(A Terrace of Five Houses.) R. F. Dodd, Walter E. Woodin, S. Stevenson Jones, W. Harding Thompson.

Subject II. (a).—(A large Monument to an Explorer.) H. Lidbetter, R. S. Dixon, F. O. Laurence, F. A. Broadhead, R. Duckett, E. F. Bothwell, C. M. McLachlan, W. E. Woodin, R. A. Barber, J. O. Cheadle.

Subject II. (b).—(A Cloister with external entrance gateway or tower to a collegiate building.) H. A. Dod, H. C. Bradshaw, E. Prestwich.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, May 29th, 1912.





THE ENTRANCE HALL OF THE TEMPLE OF IPRAMBOUL, EGYPT: A RESTORATION BY A. C. CONRADE.

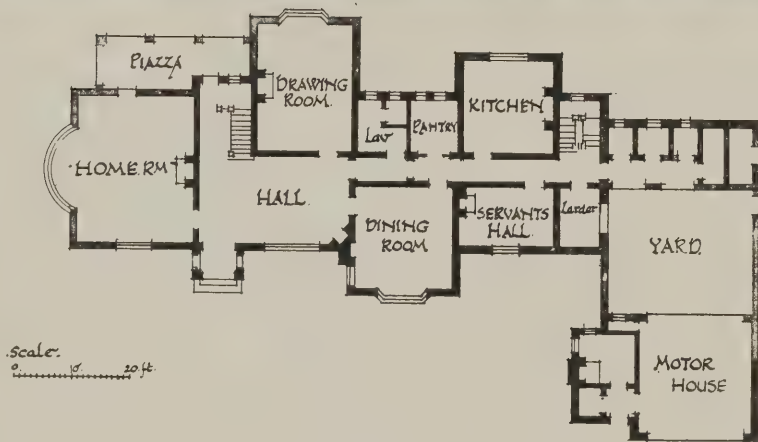


A WHITE LEAD COMBINE.

During the past few months a great change has taken place with regard to the white lead industry.

Until September, 1911, this industry was in a very unsatisfactory condition, owing to several causes, but more especially to keen and unrestricted competition among British manufacturers, and, to a less degree, among manufacturers on the Continent. The price of what is known as dry white lead stood, on the average, at a figure which left little or no margin of profit on the year's working. It is a product in which a considerable amount of speculation takes place, or did take place, and the price varied very considerably. In the middle of last year the price was 16 10s. to £17 per ton, the exact figure depending upon the particular brand and quality of the manufactured article.

For years previously there had been delirious discussions as to the possibility of some kind of combination and it appears that last autumn the inclinations of white lead manufacturers both in this country and in the rest of Europe and in the United States were brought to a focus; so that ultimately the basis of an agreement was drawn up, and in due course submitted to every manufacturer throughout the world. When the setting up of an effective combination was found to be imminent, it naturally had an effect on market prices, and dry white lead has risen from about £18 to £22 or £23 per ton. The representatives of the manufacturers have been elected in each country, and the Convention which has met in London has been a thoroughly international and comprehensive character. The actual agreement was only signed a few days ago, and this is the first authorised statement on the subject. It has been suggested that as a consequence of the formation of this Convention and agreement it will be quite easy to raise the price of the product another 5 per ton or more at the pleasure of the central authority. But there are two reasons at least why this is unlikely to happen. One is that if the price of white lead were substantially increased it would tend to check consumption, and so hinder



HOUSE AT EDGBASTON, BIRMINGHAM.
BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

the progress of the industry. Another reason is that, while the efforts made to discover a substitute capable of producing paint of satisfactory quality have been up to now fruitless, chemists are constantly working at the problem, and it is quite possible that something may be discovered which at least for many purposes might get into general use as a substitute for white lead, particularly for indoor work.

Altogether distinct from the Convention referred to, which is concerned with dry white lead, there is a combination among the manufacturers of ground white lead, which is the finished article as supplied for the mixing of paints and other purposes. This organisation will, we understand, act in harmony with the white-lead Convention.—(Extracts from the "Financier and Bullionist.")

BANKRUPTCY PROCEEDINGS.

Mr. Ernest A. Runtz.

On May 21st Mr. Registrar Brougham held the public examination of Mr. Ernest A. Runtz, architect and surveyor, of Victoria Street, Westminster, who was adjudged bankrupt, upon his own petition, on April 3rd. The statement of affairs showed lia-

bilities £8,388, of which £3,684 was expected to rank for dividend, and assets valued at £505. Mr. Runtz stated that he was formerly a partner in a firm of auctioneers and surveyors carrying on business in Moorgate Street. In 1888 he became a director of the Birkbeck Bank, and in 1897 began business on his own account as an auctioneer, surveyor, and valuer, his profits from that business between 1897 and 1906 having varied from £2,300 to £3,000 a year. The Official Receiver: "In 1908 did you resign your directorship of the Birkbeck Bank owing to your disapproval of the policy of the board?"—"Yes, and other causes." By that resignation he lost an income of £600 a year. Since 1906 his business had continuously declined owing to the stability of property in this country being affected by recent legislation. In 1907 and 1909 respectively two large companies, which were paying him fees, failed. His fees from one of these companies for the eleven years before its failure had averaged £600 a year, and he lost over £1,000 a year in fees by the failure of both companies. In 1909 his business resulted in a loss of about £406, in 1910 a profit of £840, and in 1911 a loss of £683. His wife's money had been invested in property in the East End of London, which formerly

produced an income of £800 a year, but the value of the property had been affected by alien pauper immigration, and since 1910 had not produced a penny. He filed his petition as a result of a judgment for £600 being recovered against him, and but for that judgment he believed that he could have pulled through. The examination was ordered to be concluded.

Mr. J. C. Hill.

At Bankruptcy Buildings last week Mr. G. W. Chapman, Official Receiver, presided at the statutory first meeting of creditors held under the receiving order made against Mr. John C. Hill, who had carried on business as a builder and brick manufacturer at Archway Road, Holloway, and at Ponder's End, Great Bentley, and Old Fletton, near Peterborough. The debtor had not yet lodged a statement of his affairs, but the claims of the unsecured creditors were estimated at between £80,000 and £100,000, and there were fully-secured liabilities amounting to about £1,000,000. Apart from equities of redemption in properties, the realisation of which the debtor thought was uncertain, the only assets disclosed were valued at about £1,120. The Official Receiver reported that, according to the debtor's statements, since 1887 he had traded as a brick manufacturer as well as a builder, and both businesses had been very successful, and would have so continued had it not been for the great depreciation of his various properties and the practical stoppage of the speculative building trade. Depression in the brick-making trade followed, and the debtor said that these circumstances had arisen in consequence of the land clauses of the Finance Act. He got into difficulties with the mortgagees of his properties, and owing to the depression was unable to re-mortgage. In 1909 he sold the brick business at Fletton to a company. He attributed his failure to depreciation of his freehold and leasehold properties during the last five years and to the depression in the brick trade, both caused by recent legislation in regard to land and houses. The creditors appointed Mr. W. B. Peat, chartered accountant, as trustee, to administer the estate in bankruptcy.

SOCIETY OF ARCHITECTS.

At the meeting of the Society of Architects held on May 9th (Mr. Percy B. Tubbs, F.R.I.B.A., vice-president, in the chair) the following were elected:—

AS MEMBERS.

R. H. Blackburn (Bradford).
H. Y. Boreham (London, E.C.).
B. Chaikin (London, N.E.).
D. C. Davies (Merthyr Tydfil).
W. W. Diggle (Hampstead).
T. Dowson (Sandsend).
B. J. Emery (Birmingham).
E. Hale (Birmingham).
J. R. Hall (Sheffield).
A. C. Harbottle (Exeter).
E. J. Harbottle (Exeter).
H. A. Lane (Mansfield).
H. V. Milles-Diamond (Chandlers Ford).
J. E. S. Pritchard (Kidderminster).
N. Richley (Durham).
W. F. Sargisson (Ancou, Peru).
W. Southall (Retford).
G. A. Sutherland (Wick).
H. G. Walker (Whitby).
J. E. Webb (Nottingham).

AS STUDENTS.

J. V. Bowring (Eastwood).
R. B. Craize (London, S.W.).
F. F. Hayward (Johannesburg).
A. J. Johnson (East Dulwich).
F. R. Priest (London, S.W.).
T. Rayson (Oxford).

COMPETITIONS.

Church Buildings at Mansfield and at Bedford.

The limited competition recently held with respect to the erection of Nottingham Road U.M. church, schools, institute, and caretaker's house, Mansfield, has been settled in favour of Messrs. George Baines and Son, 5, Clements Inn, Strand, W.C., and the first section of the scheme, estimated to cost about £4,700, is to be at once proceeded with. The same firm were placed first in the competition for Russell Park Baptist Chapel, Bedford, and have been appointed architects for the scheme.

Proposed New Golf Club House, Bolton.

The limited competition held for the above building, in which Mr. Arthur J. Hope acted as assessor, has been decided in favour of the design submitted by Mr. R. Hermon Crook, of Bolton.

The Whiteley Homes.

At a meeting of the trustees of the Whiteley Homes at Fox Oak, Burhill, near Hersham, held last week, the schemes submitted in the limited competition for plans for laying out the site for the homes (in future to be known as "Whiteley Park") were considered, the design submitted by Mr. R. Frank Atkinson, F.R.I.B.A., being adopted. Mr. Walter Cave, F.R.I.B.A., was the assessor.

Society of Architects' Travelling Studentship, 1912.

Four designs were submitted in competition for the above, and that sent in by Mr. F. Morrall-Maddox, of Burton-on-Trent, has been placed first. The subject set was a design for a town hall on a sloping corner site, to cost £30,000. Mr. Morrall-Maddox also gained the Society's Architectural Scholarship in 1907. He served his articles with Mr. George Dickens-Lewis, M.S.A., of Shrewsbury.

PICTURE EXHIBITIONS.

The Fine Art Society.

At the gallery of this Society is to be seen a collection of early Chinese paintings, dating from the tenth to the seventeenth century. These are all decorative paintings, long and narrow, vertical strips of material, showing decorative designs of foliage and birds, many of them of great beauty in a decorative sense. Of course, it is when they come to deal with human figures that they comparatively fail, though one figure of "The God of War" shows a good deal of power. In another room is a collection of water-colours of scenes in Spain and the Canary Isles, by Miss Ella Du Cane. Miss Du Cane has her own way of handling water-colours, the flowers and foliage, which play a great part in the pictures, being executed in small touches of very strong and decided colour, which glitter on the paper by contrast with the very light treatment of the skies; the effect is very brilliant and gives the drawings a strongly marked character of their own.

Architecture, where introduced into the subjects is always very well treated. It is interesting to see a collection of drawings which have a decided style and treatment of their own, and are not just like other good water-colour drawings.

Messrs. Tooth and Sons' Gallery.

At this gallery there is a collection of pastels, mostly landscapes, but with a few interiors, by Mr. Lhermitte, an artist to whose style of landscape painting pastel is peculiarly suited; in fact, his oil paintings are rather pastellist in character. These are admirable examples of the free and broad treatment of landscape, or landscape and buildings combined; the large one, called "La Pilgrimage," is a very fine picture, though the action of the group of figures does not quite explain itself in relation to the title. Among the smaller pictures "Le Vieux Jardin," "Laveuse, le Matin," and "Moulin à Eau," are especially good.

MANCHESTER, SALFORD, AND DISTRICT BUILDING TRADES EMPLOYERS' ASSOCIATION.

As recorded in last week's issue of the JOURNAL, Mr. George Macfarlane, J.P., who has held every office it is possible for anyone to hold in the National Federation of Building Trades Employers, from chairman of the smallest local committee to the Presidency of the National Federation, was the recipient of a testimonial at the annual general meeting of the Manchester, Salford, and District Building Trades Employers' Association, held at National Buildings, St. Mary's Parsonage, Manchester, on May 16. The testimonial, which comprised an illuminated address, a cabinet of cutlery (110 pieces), a silver tea service and tray, fruit stands, etc., which had been subscribed for by the members and friends of the local affiliated associations and Federation, was presented by Mr. Henry Matthews, J.P.

Mr. Councillor James Higson, J.P. (the newly-elected president of the association), Mr. James Storrs, J.P., and Councillor S. Smethurst, J.P., joined Mr. Matthews in eulogising the splendid services that Mr. Macfarlane had rendered to the building industry throughout the country.

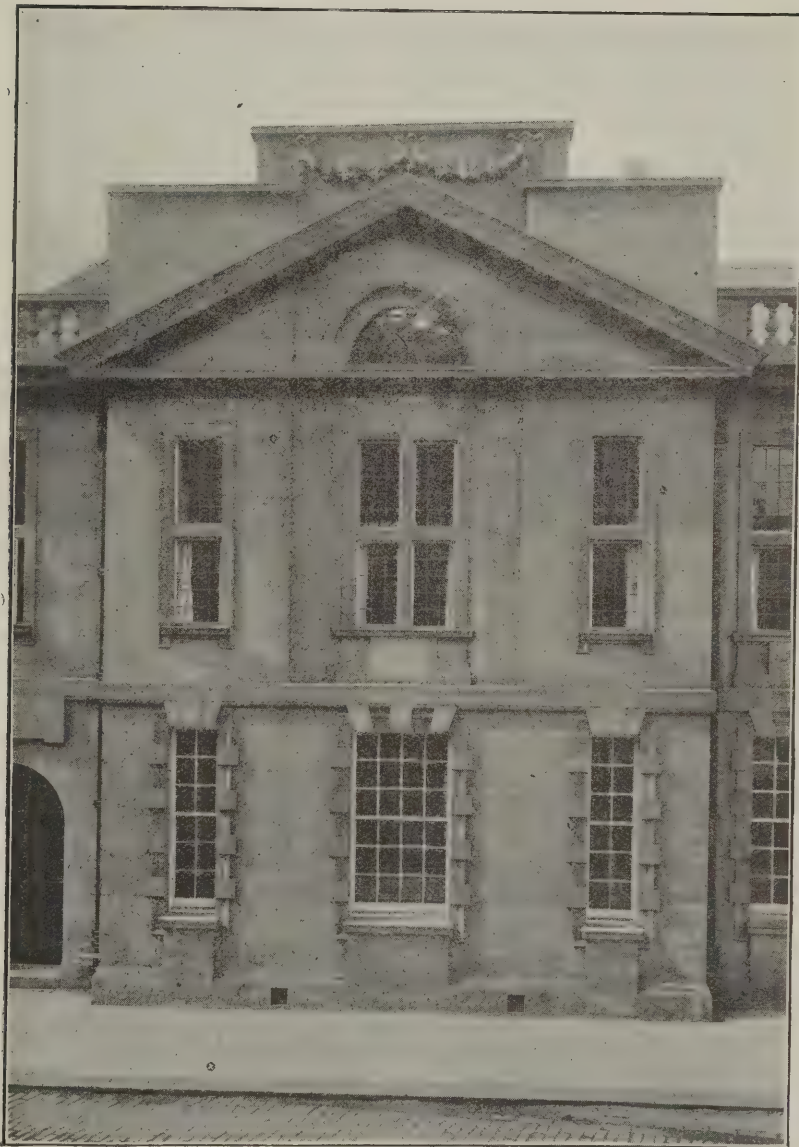
Mr. Macfarlane, who spoke with visible emotion, said he felt sure that he had done nothing to warrant such an astonishing manifestation of kindness. He appreciated very highly the genuine goodwill and kindly disposition which had prompted the bestowal of such a token of their affection and esteem, and he expressed the hope that after he had gone his children would prize the gifts as fitting heirlooms, and that they would always remember, when they used them, the honour conferred upon their father by his fellow-workers and fellow-tradesmen, who had shown that even rivals in business could be kindly disposed and generous to each other. He felt that his services for the trade had been considerably magnified, but at the same time he hoped that every member would cultivate that spirit of mutual assistance for the benefit of the trade which had always been his object. He should always look back upon that day as being the red-letter day of his life, and he assured the members that as long as he was able he should continue to work in their interests and for the welfare of the association.

THE ARCHITECTS' & BUILDERS' JOURNAL.

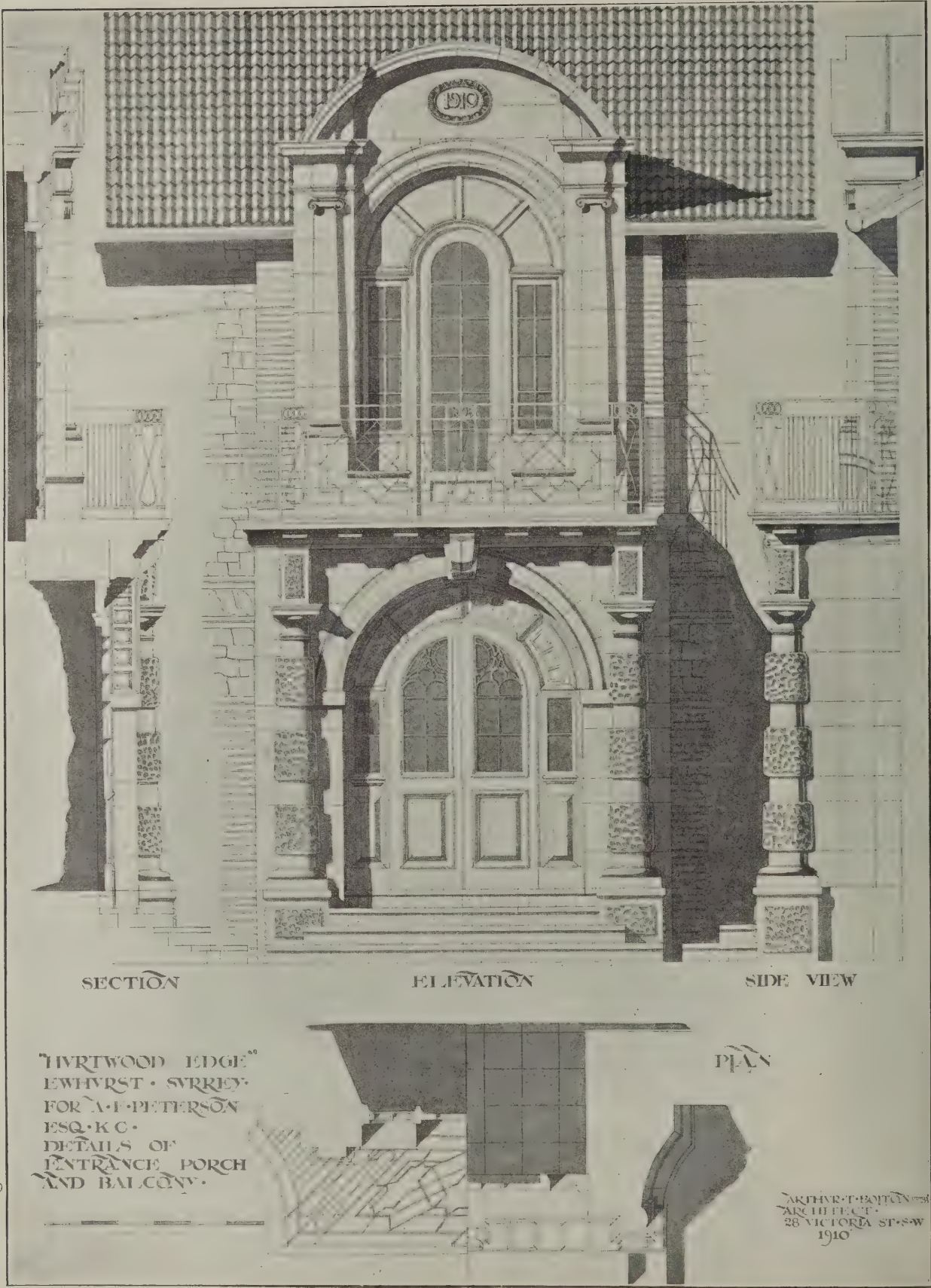
WEDNESDAY,
JUNE 5th, 1912.

Volume XXXV.

No. 907.



DETAIL OF POLICE STATION, GILL BRIDGE AVENUE, SUNDERLAND.
W. AND T. R. MILBURN AND WILLS AND ANDERSON, JOINT ARCHITECTS.



THE ARCHITECTS' & BUILDERS' JOURNAL.

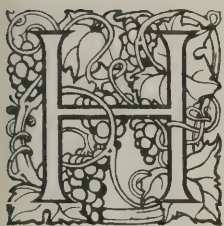
JUNE 5th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 907.

Architecture at the Royal Academy.

Concluding Notice.



HAVING already reviewed the works of the Academicians and the illustrations of public buildings and of church architecture, we may now conclude by noticing some of the exhibits not included in those categories.

Professor Pite exhibits a drawing of his frontispiece to the Piccadilly end of the Burlington Arcade, which is now familiar to all Londoners. It answers its purpose very well; to tack anything very original to the end of such an old-fashioned avenue as the Arcade would hardly have been in keeping with the situation. We next turn to two drawings by Mr. Lutyens, both executed in a very effective though rather sketchy manner in water-colour. The "Art Gallery for Johannesburg" seems, as far as architectural expression goes, exactly the thing for a rather small art gallery; it is obviously an art gallery, and could be nothing else. It is a long, low building, with a columned portico in the centre, the wings being solid wall with a recess for sculpture in the centre of each. An outlying building on each side has a high hipped roof, with two windows and a sculpture recess between them. What function these fulfil is not apparent, but the whole forms a very agreeable architectural composition. Mr. Lutyens's larger drawing, "Headquarters, Theosophical Society, Tavistock Square," is one of the best things in the room. A complete plan is given, showing that there is a quadrangle entered under an archway, above which rises a tower, worked first into an octagonal stage and then into a circular cupola; the entrance is through a tunnel vault in a rusticated basement. The two wings which advance in front, on each side of the entrance, are very simply treated, with square-headed windows, of which one in the centre of the second floor is accentuated by a pediment, and higher up a similar pedimented window breaks the line of the attic. The whole forms an expressive and well-balanced piece of architecture.

Mr. Martin's "New Hall, Wilton Terrace," is a piece of interior Classic architecture, of which the ceiling design, as far as shown, seems to be the most interesting part. Mr. Pearson exhibits a large line drawing of "New Wing, Sidney Sussex College, Cambridge" (no plan), in what may be called collegiate style. The large oriel window, however, from its manner of treatment, rather disturbs the repose which should characterise this type of architecture. Professor Reilly exhibits an interior of the "Gilmour Hall" in the Students' Club of Liverpool University. The walls show a Doric order and entablature, with what might be called an attic above the cornice, which at the end of the room is pierced with windows. The flat ceiling is heavily coffered all round, leaving a large panel in the centre, which appears to have a ceiling painting on it. A Doric order seems rather too heavy a feature for an interior of this kind.

The "Accepted Design for Stockport Police Court," by Messrs. Halliday and Paterson (no plan), might be a

bank, though it will do for a police court. It is a low Classic building, with strongly marked horizontal lines. In the centre rise higher blocks, which probably represent the upper part of the courts. Following the order of hanging, we next notice something rather unusual, in the shape of a country bank standing in the middle of a garden—"Bank at Matlock," by Messrs. Langham and Parker (no plan). Apparently this is really the bank manager's residence, with the bank attached to it as a one-storey building at one end; the distinction between the bank entrance and the residence entrance is well marked. Mr. E. White's "Garden to a house at Adelsnäs" is a small pencil sketch looking up the central vista of the garden, with a circular opening and fountain in the foreground; in the middle distance are seen symmetrical stone flights of steps arranged on curved lines. It looks like a very good and effective bit of ornamental garden planning, formal without being too formal. Mr. Warren's "Radcliffe Infirmary, Oxford: New Admission and Research Wing," is a kind of building of which a plan ought to have been given. All one can see is a perspective view of a very plain stone building, with which there is no fault to find, but its architectural virtues are rather negative.

Messrs. Weymouth and Easton exhibit a large perspective of alterations and additions to "Belvidere Fort, Windsor Great Park," for the King. From the colouring of the plan we suppose that the additions are the set of rooms which form a kind of tail to the older portion of the plan. This seems to be an old-fashioned piece of battlemented Gothic. The whole makes a good picture, and the plan seems to be well arranged so as not to interfere with the effect of the existing buildings. Mr. Prentice exhibits three drawings of houses in that exceedingly neat and finished line drawing in which his buildings are always illustrated; but no plan of any of these houses is given, and it is difficult to say anything about them except that they are all very neat examples of domestic Gothic, with mullioned windows, excellent as drawings, but rather deficient in any marked character. There is character enough in Mr. Palmer Jones's "House at El-Assasif, near Luxor." This represents the employment of indigenous architectural style by an English architect. The house appears to stand in a waste of sand hills, three domed blocks in the centre and at the two ends, connected by long, low-recessed blocks, with an arcaded loggia in front. The basement is of battered rubble walling, above which are plain masses of grey walling, without even a moulding at the top, pierced with a few small windows. This is, at all events, a drawing one cannot help looking at. A plan is added.

Mr. Oliver Hill's "Swimming Pool in a Garden, Berkshire," is an interesting pencil drawing, with a plan added. The swimming pool and a long grass lawn lie parallel, with a wide flagged walk between them. On one side of the pool the balustrade takes a semicircular sweep, with a flight of steps following the curve. At the top end of the pool there is also a somewhat similar alcove with steps. This is a good piece of open-air garden architecture. Messrs. White and Webb's "Marden Park, Woldenham," a water-colour drawing hung very high, is

another piece of open-air garden architecture, showing three turfed terraces rising in successive slopes, with flights of stone steps in the centre, leading down to a circular fountain basin. Mr. Crickmer's "Group of Houses, Letchworth," done on tinted paper, with the plastered upper storey of the houses put on in white, is of interest from the plan of the block of houses and the garden in front of them filling the triangle between a meeting of two roads, the house at each end of the block being canted on plan so as to face parallel with the road.

Mr. Walter Brierley's "Sion Hill, Thirsk," is an important exhibit, illustrated by a rather unusual plan. A long narrow "outer hall" runs the long way of the house, out of which opens the hall, with dining-room at one end and boudoir at the other, the hall apparently serving the purpose of drawing-room. The outer hall leads at one end to a small square "garden hall," out of which a garden door opens, and the smoking-room is contiguous to this. A compass added to the plan (as it always should be on a house plan) serves to show that the right aspect of the various rooms has been carefully considered. It is a red-brick house, relieved by white window sashes, and with fine stone gate piers showing in the foreground. Mr. Ball's "East and West Fronts of Furze Hill, Willersley," are two very pleasant little pencil perspectives, illustrating unfortunately the want of a plan, for the perspectives show both elevations, back to back, with the end portions canted forward at an angle, but how does the plan work out to these lines? Messrs. Unsworth, Son, and Triggs's "Ashford Chace" is a pretty house, with a plan showing some unusual and effective treatment. Mr. Maule's "Kelling Hall, Norfolk," a small but very carefully executed bird's-eye view, is worth attention. The plan shows some original points, especially the boudoir and drawing-room forming two projections at an oblique angle at one end of the house, with a columned loggia formed from the triangular space between them. The whole plan is interesting, and seems to have been carefully considered, but we do not understand what is the end erection, with a slightly concave front, outside of the servants' hall. Mr. Tilden's "Porth-en-Alls, Cornwall" (no plan), is a fine pen-line drawing of a house of somewhat striking and unusual character. It looks as if intended to have the special character of a seaside house for an exposed situation, with the basement wall battering and the windows with massive unmoulded mullions. A kind of pyramid of steps goes up to the entrance arcade, beneath which is a large doorway, with a heavily moulded segmental arch over it—perhaps a boat-house. The same architect exhibits a small sketch of "Cottage, Porth-en-Alls," which appears to be a cottage on a curved plan and with very little window—perhaps the windows are on the other side, but it is a bit of local character in building.

In the "House in Smith Square" (no plan), which is a house with the entrance door in the internal angle of the square, Messrs. Blow and Billerey have adopted a simple architectural treatment in keeping with the general style of this quarter of London, grouping the windows vertically, with a cornice over the middle window; plain brick wall surface between the groups of windows. Mr. T. E. Cooper's "Proposed Public Library, Homerton," is really a detail elevation of the entrance, with a detail plan and also a general plan of the building. This is a very well-considered piece of Classic detail in a severe style. In the view of the "Weights and Measures Offices, Whitecross Street," by Mr. Sydney Perks, we come to a piece of very characteristic and picturesque building, on which the architect may be congratulated. The ground floor shows large round-arched windows in plain brickwork, above which are two storeys of small flat-headed windows divided by white strips of cemented or roughcast wall, producing, in a very inexpensive manner, a kind of pilaster effect. The centre feature has coupled brick pilasters carrying a segmental pediment. A small plan is added. This is a very good and interesting example of the treatment of a plain building for business purposes. "Business Pre-

mises, Duke Street, St. James's," by Messrs. Harris and Moodie, is also a piece of building possessing some character, having a stone rusticated basement with arched windows, and above this columned and pedimented windows in stone, which stand out against an expanse of brickwork; the large stone cornice at the top is stopped against large consoles, which seems a better way than merely returning it on itself. Mr. Waterhouse's two buildings for two assurance companies, the "Prudential," at Grimsby, and the "Atlas," at Birmingham, illustrated in two very good water-colour drawings, show the same general idea in the design; in each there is a high ground storey with a very large arched window in the centre—that, we suppose, is the office part of the building—and above this commences an orthodox Classic treatment with a pilaster Order. Of the two, we prefer the Birmingham building.

In a very large perspective drawing Mr. Henry Tanner shows "Oxford Circus" as we suppose he intends to rebuild it so as to get the circus effect again, with an Order and cornices at the same level, which in the way of dignity of appearance will certainly be an improvement on its present condition, though it is very difficult to realise the effect of a circus at all when four such wide streets cut into it. One quadrant of this design is already erected; if the rest follow soon it will certainly be an important street improvement to this part of London.

There is not much decorative work to speak of in the Architectural Room this year. Mr. Leslie Wilkinson's "Wrought-Iron Gates for an Estate in Russia" is a good piece of design on the generally accepted lines of the best English work of the kind, but does not differ materially from a good many other designs, ancient and modern. Mr. Palmer Jones's "Mausoleum at Brookwood" is another good piece of design of its class, of rather German type, which is saying nothing in its dispraise, for the German architects of the day are almost at their best in the designing of sepulchral monuments. The architect has depended for its effect mainly on the arrangement of mass and outline in a design of sober masonic character, with hardly any ornament; and the work is very effectively shown in a water-colour drawing. Of the various coloured drawings of stained-glass windows which fill up small spaces amid the architectural drawings there is little to be said: they are mostly of familiar conventional types. Mr. Guy Miller's little drawing of a stained-glass window representing "Industry" is a remarkable bit of colour, but it is a perspective representation of an interior, which is a mistake in stained glass. The most original suggestion for a window is another by Mr. Miller, "Design for a Library Window," illustrating Tennyson's poem, "The Lady of Shalott." In the lower portion, which is mostly white glass, the figure of Lancelot on his charger is slightly indicated in colour, and in the upper part of the window is a circle in stronger colour, indicating the Lady at work on her "web." There is fine decorative effect in this little design.

It is, however, a very poor way of exhibiting stained glass design to hang a few small water-colour drawings of windows, in which only the intended colours can be shown in flat tints, while the real effect of stained glass cannot be realised at all. At an "Academy of Arts" in the true and full sense, there should be an arrangement for the exhibition of some actual stained glass, to be seen by transmitted light. But the Royal Academy is practically little more, in its exhibitions, than an Academy of painting, and that it is so is to a great extent the fault of the public, which cares more for pictures than for any other form of art; and the exhibitions are arranged accordingly, since the main object is to please the public and render the exhibitions popular. This is not a satisfactory state of affairs. The Academy ought to aim at educating public taste in art, rather than merely giving the public what it wants.

The Proposed Chair of Town Planning.

IT is proposed to establish a Professorship of Town Planning at the London University. It is rather a question whether Town Planning is not getting promoted into the position of being a kind of special mystery without quite sufficient reason. The considerations which govern good town planning are, in fact, what every good architect ought to understand as part of his art; it is a part of architecture, which men like Wren and Barry, for example, thoroughly understood without regarding it as an art separate from any other branch of architecture. There has been a great deal of attention specially called to the subject during the last few years, but the requirements of good town planning, æsthetic and practical, are no more than what ought to be a part of the perception of any really able architect. In a chair of architecture town planning ought to be supposed to be naturally and necessarily included. To raise it to the dignity of a kind of special and separate profession seems rather likely to end in producing a series of *doctrinaire* theories as to the right way to do it, which would not be by any means universally applicable. An architect who cannot plan a town or a new suburb well is not likely to plan anything else well.

A Drawing of the Pantheon.

WE illustrate on this page a measured drawing of one bay of the Pantheon, Rome, by Mr. Ernest Prestwich, who is the first student of the School of Architecture, Liverpool University, to spend a year at the British School at Rome after taking his degree. Mr. Prestwich's main work, apart from small studies such as this, has been a careful measured survey and restoration of Sulla's monumental summer residence, temple, and gardens at Palestrina. These drawings, now nearly finished, are on a scale approximating to the restorations by the French Prix de Rome students at the Villa Medici, and will form the first English example of this sort of work which has been done since the days of Wood and Robert Adam.

The Conference on Street Name Plates.

THE Art Committee of the Institute of Architects recently took up the consideration of the extremely unsatisfactory condition of street name-plates in London in regard to their design, their variety of form and style, and their absence at many points where they ought to be fixed, and some correspondence took place between the Committee and the various Borough Councils of London on the subject. Some few of the



MEASURED DRAWING OF ONE BAY OF THE PANTHEON, ROME, BY ERNEST PRESTWICH
(School of Architecture, Liverpool).

Councils were recalcitrant and seemed inclined to take the line that they understood their own business best, but from the majority there was a sympathetic response, and ultimately a small conference was held a few days ago between a number of members of the Institute of Architects and representatives of a majority of the Borough Councils. The main points to be considered in connection with the subject are the artistic character of the name-plates, the material to be used, and the question whether they should be different for each borough, or whether there should be a uniform design for the whole of London. As far as the lettering is concerned, what is important is that it should be easily legible and that the lettering should be of good artistic character. For this latter object, of course, it is not necessary, nor even desirable, that letters of any unusual form should be adopted. The more simple they are the better, provided that their lines are good. The best system would seem to be that of letters in relief on a dark ground. One advantage of having them in relief is that when they become weather-stained and require renewal this can be done by merely painting them afresh, a mode of renewal which can be done by anyone who can handle a paint-brush. The London and North-Western Railway Company found this out long ago and employ raised letters which can be painted on by anyone, whereas letters painted on a flat ground require a practised sign-writer to renew them.

The question of a uniform design for the whole of London will probably raise some differences of opinion. Some of the Borough Councils wish that each of them should have its own distinctive name-plate, so that the character of the plate will be an indication which borough the street belongs to. That seems to us to be a mistake. One objection to it is that in some cases the borough boundary goes down the centre of a street, so that in that case there would be a different character of name-plate on the two sides of the street. A more important objection is that the desire to have a distinctive style of lettering for each borough would increase the difficulty of selecting a simple form of lettering; there would be a temptation to elaborate different forms of letter in order to make these distinctions. But the most important consideration is that it is much more for the convenience of the public to have a universal form of plate adopted for the whole of London. And another point is involved in this, viz., the importance of having name-plates placed at the corners of all streets, without exception. Some of the Borough Councils, it appears, are afraid that this will involve them in an inordinate expense. They have no right to take that into consideration. Their duty to the public is to provide every passenger with the means of knowing what street he is in the moment he enters it. At present there are many cases where a man has to go some distance along a street before he finds its name up. This is quite different in Paris. At whatever street-corner you arrive in Paris there you will see the street name up, because the Paris municipality do these things in a thorough and systematic manner. What is done in Paris can be done in London, and ought to be done. Some interesting and very practical observations on the subject are supplied in another part of the present issue by a contributor, who illustrates some of his points with a few snap-shots of typical London and suburban name-plates.

Architects Signing Their Buildings.

A WRITER in the "Manchester Guardian" has a rather amusing paragraph commenting on the fact that a building has been advertised for sale with the recommendation that it was "designed by the late E. M. Barrie, R.A.," and, after thus mis-spelling the architect's name, goes on with the statement that he was mainly remembered as the son of his father, "the designer of the Houses of Parliament." The great architect who designed the Houses of Parliament was Sir Charles Barry and it is rather melancholy to find

that a prominent newspaper does not even know how to spell his name; and his son, E. M. Barry, was an architect of great ability, who would have had a claim to be remembered as such in any case. As to the matter of architects signing their names on their buildings, as a painter signs his pictures and a sculptor generally cuts his name somewhere on the pedestal, we quite agree with the writer in question that it would be very desirable that architects should do so; it would, at all events, serve to remind the public that there are such persons as architects and that buildings do not grow of themselves.

The Cambridge Slade Professor on Art Study.

THE inaugural lecture delivered by Mr. Prior, the new Slade Professor of Fine Art at Cambridge, was of a much more practical type than such addresses sometimes are. Mr. Prior naturally regards architecture as his special province in carrying on the work of the Professorial chair, and on that subject he has definite opinions and expresses them in a clear and decisive manner. He pointed out that there were two classes of persons concerned with art, more especially in regard to what University teaching can do. There is the man who purchases art and the man who produces art; and the University has two faculties which it can train, that of the public and that of the artist. But we are disposed to think that the first is really the proper work for a university. As regards the teaching of the artist, Mr. Prior dwelt strongly (as we should have expected that he would) on the importance of craft knowledge of an art—and we may suppose that he was still thinking mainly of the art of architecture—not merely a book knowledge. Of course, he is quite right—specially right in regard to architecture; but can we think of Cambridge University becoming to any extent a technical school of art training? That is what must be meant, if it means anything, and we can hardly conceive that to be the object of a university. The primary object of a university is a high mental training, what is called a "liberal education." It can hardly be said that technical education comes properly into that programme and we should think that the man who is in especial want of technical training would be able to get it much more effectually somewhere else than at a university. The real business of a university professorship of art is to educate its students in the understanding of art—to teach them to realise what art is and to distinguish good art from bad. Mr. Prior made a strong point about this in remarking how many clergymen were educated at Cambridge and went from the University into positions in which they might have the whole custody and preservation of an important work of ancient architecture in their hands; and, as he quite truly said, many clergymen were very deficient in the degree of knowledge of and interest in architecture which would enable them rightly to treat and preserve the buildings under their charge. But is architecture the only art? How many Englishmen who have received a University education really know the difference between a good picture and a bad one? How many educated Englishmen, in the ordinary acceptance of the word education, care anything at all about sculpture? How few there are the sculptors know feelingly, for your educated Englishman, who may have taken a brilliant degree, comes perhaps to occupy an important position in the Government, but has never learned the value of art, or that it is something worth spending encouragement and money upon. That is what the University ought to teach him and that is what a Professorship of Fine Art in a University is really for—to ensure that men going through their University career should at least have the opportunity of learning something about art as part of their study, instead of their acquirements being confined to literature or higher mathematics. What we want especially in England is an enlightened public opinion on art. We have plenty of able artists, but they do not get sufficient encouragement, and University education in art should be one of the best means of developing that enlightened opinion.

THE CAPE DUTCH HOUSE.

THE beginning of European architecture in South Africa was made by Johan van Riebeeck, who in 1652 went to the Cape as the accredited agent of the Dutch East India Company, and built there a little wooden fort wherein to take shelter against the aggressive Hottentots. To him and to his successors, Simon and Adrian van der Stel, with their Dutch passion for stately avenues and broad spaces, must be credited the foundation of an excellent tradition in town planning, of which the influence is still observable in the cities of South Africa.

"When it is realised," says a scholarly writer in a recent issue of "The African Architect," "that a certain phase of architecture is the outcome of social and geographical conditions, it is easy to ascertain why the work of the early settlers possessed such distinct individuality and character. It required a great personality like Simon van der Stel, who in the face of tremendous opposition and continual fault-finding on the part of the Seventeen—the name by which the Dutch East India Company was known in Holland—centred his ideal of life in homes of quiet dignity and beauty amidst orderly plantations of avenues and groves. In future years, when the thoughts of the people are turned more decisively to the founders of the South African nation, they will discover that Van der Stel's part in it bore no mean resemblance in its influence upon the art forms of the country to that of Brunelleschi in Italy during the fifteenth century. The development of the architecture of these early settlers, who were in a position to be eclectic, must prove as absorbing to the student of architecture concerned with the formation of style as it is to the archæologist."

The writer shows that, having the choice of two styles—Dutch and Asiatic—they adopted neither, but formed a style of their own, drawing from both sources those features which best suited their needs. The resultant blend between East and West may be traced, for instance, in the narrow and delicate louvred screens which form such a charming feature in dividing the inner from the outer hall in the old homesteads of the Cape Peninsula. Rather curiously, they never adopted the covered stoep of the East, preferring, as a shelter from the sun, an open pergola or trellis, creeper-covered.

The law of local materials was to a great extent responsible for some of the most characteristic features of the early work, and to it is due the plain plastered walls and the long low line of snug warm thatch with which most of the country houses were roofed. In Capetown itself the prevalent heavy winds and the risk of a fire at a later date compelled the adoption of a flat plastered roof. The walls were built of bricks or rubble and plastered. The bricks were made by the settlers, who had at their command a large number of slaves imported from Madagascar. Wherever the brickwork was exposed, and this occurs in the steps and stoeps of the more pretentious homes, the bricks were imported from Holland, and were of a small yellow pattern, well-burned, known as "klompjes." The woodwork was almost invariably of teak, used in generous proportions, the furniture being occasionally embellished with ebony and ivory, brought by the returning vessels from the company's possessions in India. The carving which is used in rare but essential features of the houses was done by a few skilled workmen who migrated with the Colonists, amongst them the sculptor Anton Anrijt, who already enjoyed a considerable reputation in his own country. The greatest appeal that these houses make is their absolute simplicity; indeed, the *motif* of the whole may be said to be governed entirely by their human needs. They rely for their charm upon one of the most important essentials in all satisfactory architecture, that of good proportion.

The Castle at Cape Town.

The most celebrated work, and at the same time the greatest achievement, of these early Dutchmen was the

building of their castle with its moat. Its most striking feature is the entrance gateway, built with the small imported Dutch bricks. It is flanked on either side by a couple of pilasters with a frieze and pediment, all of hard green stone. The design, though simple, is good. The frieze contains six coats of arms of the cities interested in the company's trade—Amsterdam, Rotterdam, Delft, Zeeland, Hoorn, and Euckhuysen. Over the pilasters is the monogram of the company, whilst in the pediment are the arms of Holland. Above the entrance is an octagonal turret with a cupola, executed in the same small bricks, sheltering a fine bronze bell, bearing the inscription:—

"Benedicat Tena Dominum Laudet et super exaltetur in caecula Claudierenime Facet Amstoledam in anno 1697." The main walls are faced externally with local stone, and the plan of the fort is pentagonal. It was designed by the famous military engineer, Vauban. The inner courtyard contains the rooms and offices which originally served as the Governor's residence. The entrance portico to these is perhaps one of the most beautiful architectural features still remaining of old Cape Colony. The handsome doors have one of those



THE CASTLE GATEWAY, CAPETOWN.

wonderfully-carved fanlights, almost unique in the Cape Peninsula. The importance of this building in the history of the country's architecture will the more easily be realised when it is remembered that it was set down upon savage shores 6,000 miles away from European civilisation, built of the best material, and with architectural enrichments such as subsequent workmen have never surpassed.

"Groote Constantia."

To turn now to their domestic architecture. The first large country house in the colony was "Groote Constantia," built by Governor Simon van der Stel, who chose the site for his own farm in 1685, and spent his declining years there in peace. It is a far cry to those early days, but Constantia hands down to the modern wine farmer a reputation which his own products have not yet secured. Since the early days of the Huguenots at the Cape of Good Hope the farm has been famed for its wines. It is interesting to recall that it furnished Sheridan with an opportunity for indulging in his wit. It is related that he was dining with Lord Chancellor Thurlow on an occasion when some Constantia was produced which tickled the palate of the connoisseur so much that he set his wits to work to get more of it. The Chancellor, however, unlike Meredith's Sir Willoughby Patterne, was not easily induced to produce his rare vintage in such pro-

fusion, and Sheridan, realising that his endeavours were proving fruitless, turned to a gentleman next to him and said: "Pass up the decanter, for since we cannot double the Cape, I must return to Madeira."

Constantia is the prototype of all the Cape homesteads. In minor degrees its plan differs from all of the



THE MAIN GABLE, "GROOTE CONSTANTIA."

later houses in that the large hall is in this instance placed longitudinally instead of across the building in order to avoid the natural fall of the ground. Like all the other early homesteads, it is built of small bricks and plastered. The main roof is well but simply constructed of timber cut from the silver trees once so plentiful along the mountain side, and is thatched with reeds. A typical feature of the house is the provision against fire from the thatched roof. It consists of a layer of clay, which is placed above the beams of the ceiling, and is sometimes covered with brick. Locally this is known as "brand solder," or fire loft. The space thus formed in the roof was generally used as a storehouse for forage or for drying fruit and was reached by a flight of steps from outside. Light was procured from a window in the main gable. In this instance the gable is decorated with a plaster figure symbolising Constancy, attributed to the sculptor Anrijt, who is also supposed to have created the remarkably fine decorated pediment to the wine cellar representing a Bacchanalian scene. The house possesses all the essentials from which the style of the surrounding homesteads sprang. There is the decorated gable which varies considerably in form throughout the Peninsula, and is undoubtedly of a South Netherlands (Flemish) origin; the stately entrance door with its fanlight, which had not yet begun to be carved into those exquisite forms which are found in the later work; the well-proportioned sash windows set almost flush with the wall face, and framed in heavy teak, with solid teak shutters for protection to the lower half. The iron hinges and brass work, which in all the old homes were usually of excellent quality, are in this instance attributed to a locksmith who touched at the Cape on his way to Batavia, and was detained by Van der Stel, to the great indignation of the company's directors.

Whoever may be responsible for the metal and brass-work which adorns most of the old doorways must have been master craftsmen, for in almost every instance there is a finish, a knowledge of the limitations of the material, and a refinement of design such as is rarely surpassed in door furniture. There can be no doubt that a considerable amount of this decorative work and the ever-increasing tendency to elaborate the modelling of the gables and plasterwork generally owed its origin to the influence of the French Huguenots who fled to South Africa after the revocation of the Edict of Nantes. This idea is emphasised by the more pretentious forms of the gable found around French Hoek, which was their first settlement.

Town Houses.

The town houses, the more important of which were designed by a French architect named Tibbault, naturally differed from those in the country, the chief alteration being that they were frequently two-storeyed and

had flat roofs. The open stoep—always an important feature of the work—was usually very high and approached by many steps. At either end was built a seat where servants waited whilst their masters and mistresses paid their calls. The façades of all the two-storeyed homes are even simpler than the country houses. With the flat roofs the gable, of course, disappears, and in its stead there is a well-designed cornice running the entire length of the house. In a few instances the façade is relieved by Doric pilasters, now and again fluted. On the flat roofs of the town houses they built a small room or "observatory," from which the anxious inmates of the home eagerly scanned Table Bay in search of vessels, few and far between, bearing news and tidings of the homeland. The remaining features of the town house were again those found in the country homes—the carved fanlight, the stately entrance door, and the well-proportioned sash windows. The only other distinctive detail, also introduced into Ceylon by the Dutch, is the detached belfry found near most of the farm homesteads. This was used for rousing the farm hands, sending them to the plough at sunrise, and calling them from the fields at noon for the midday meal and to rest at sunset.

Dutch Furniture.

Dutch furniture possesses a fascination for the collector nowadays because of its splendid craftsmanship. The love of soft wavy lines has given to their huge wardrobes bedecked with silver-mounted handles and escutcheons a charm particularly their own. How far these were made locally it is impossible to say, although the use of South African woods, particularly stinkwood, is a considerable argument in favour of the theory; certain it is that much more is attributed to the colonists than actually was wrought by them. Furniture more or less of the Dutch pattern is found throughout the East, as is that of the Portuguese, for these two nations bartered their marqueterie, cabinets of ebony, and their porcelain with the Celestial, who not infrequently added to them his own lacquer. This probably explains much of the work and decoration of the tall clocks and cupboards occasionally inlaid with ivory which have found their way back from the East. The one outstanding feature of Colonial furniture is the seating to the chairs. For this thin leather thongs were used, well "breied" or tanned in the sun,



THE WINE FARM, "GROOTE CONSTANTIA."



AN OLD DUTCH DWELLING IN CAPE COLONY.

and then strapped across the chair each way about an inch apart. These are known locally as "reimpje" seats, and when well prepared endure years of hard wear.

Homer painted the whole picture of the sense of quiet dignity which is written over the doorway of these Cape homesteads in one beautiful line of the "Iliad":—

His home stood by the wayside, and every wayfarer was his welcome guest.

They tell of years of kindly hospitality and good will, not unnaturally the outcome of poor human souls who, after inheriting 200 years of unrest, of persecutions and intrigues, revolutions and wars, were able to find peace in the cool sequestered by-ways of the Cape. Wherever they settled they built their house, with its large hall, from which the bedrooms and the kitchen led directly off. They decorated it with quaint gables and a beautiful door, in two halves, in the country, so that when the upper half was left open the lower one might keep out the poultry, sheep, and calves of the farmyard. They planted orderly avenues of spreading oaks, and guarded the entrance by massive gate piers, and around this made their vineyards, which ran out as far as the eye could see, until they ended in the ever-changing hues of the veldt beyond. The streams which tumbled noisily over the river stones they led past their wine cellars and stoeps and enclosed them in canals, with quaint curves and piers; and often on the mountain-side near by is seen the small white-walled "Campo Santo," shaded by gnarled oaks, where sleep "the rude forefathers of the hamlet." These old homesteads ever hold for those who care to seek one great abiding charm in the quality of repose and the absence of pretension. At one time on their stoeps—the unfailing appendage of every Dutch house—stout burghers and their wives gathered to talk and laugh and make merry, and welcome the occasional guest from beyond the seas. They are relics of a bygone day and emblems of a storied past before wealth and struggle and strife brought the land into closer contact with civilisa-

tion. Each of these buildings is handed down as a national asset which can never be increased; each

solid frame is pledge of future glory,

And links our doings with our country's story.*

South Africans would do well to pause and consider whether sufficient attention is being paid to the preservation of these relics of bygone days. There must be many who regret the gradual disappearance or disfigurement of the beautiful old homesteads and the passing out of the country of many of the choicest pieces of furniture. The preservation of these noble relics of the past should be an act of pious duty. If this is neglected and injury to and destruction of these precious remains of the old Dutch colonists proceed unchecked, their entire disappearance is but a matter of a few years, and with it must go much pride of race and tradition of descent.

The intermediate period between the early settlers and those building to-day was productive of a great amount of spurious work done by irresponsible builders who, arriving at the time of the first discovery of the mineral wealth of the country, began to erect dwellings without any idea of considering the climatic conditions or pressing into their service any of the natural resources of the country. Homes were wanted rapidly by a fast-increasing population, and they were supplied in the easiest manner—by reproducing *in toto* the ordinary jerry-built villa which abounds in Northern Europe. Ill-educated individuals possessed only of the merest superficial knowledge of their work gave to the public, whose character was moulded into a craving for actuality, what they wanted. For many years the stock cornice, cast-iron column, and corrugated iron roof reigned supreme; and to those were added decorations of the most tawdry description, so that the architecture of this period is of little or no historical value except to prove the derogatory effect sudden wealth may have in the moulding of a nation's taste.

* "To the Old Drostdy Tulbagh," by F. C. Kolbé, D.D.

THE STREET NAME-PLATE PROBLEM.

BY RAE DOUGLAS.

I HAVE noticed that, for some years past, THE ARCHITECTS' AND BUILDERS' JOURNAL has seized every legitimate opportunity of advocating a more rational and more artistic method of labelling streets, and I cannot resist the conclusion that the persistency with which you have called attention to the need for reform must have had very considerable influence on the decision of the R.I.B.A. to call a conference on the subject.

Strolling round a few streets in and near London, with the express object of taking observation on this subject, I soon saw that such an investigation might be made to yield a good deal of interest and amusement. It would be easy, I should think, for any one who had the leisure, to make a collection of curiosities in street labelling. Of course, I do not mean that, after the manner of Tom and Jerry, who collected door-knockers by the brutal process of wrenching them off, the street name-plates should be taken away bodily. Those that seemed worth it, however, might be taken with a camera.

The few specimens of which I venture to send snap-shot photographs are neither curious nor amusing. They are, on the contrary, rather depressing, and all the more so because they are just average specimens of current practice. Their main service is, I think, in showing how the thing is commonly done, and, incidentally, how it ought not to be done.

The City of Westminster must be credited with having taken the matter in hand with considerably more thoroughness and energy than can be easily discovered elsewhere. Apparently every street corner is labelled; and there has been adopted a uniform pattern, of which the "Ashley Place" sign is an example; although a few earlier and unstandardised labels that have weathered well have been allowed to remain unspersed. The standard form, however, preponderates overwhelmingly, in more than one sense of the adverb. Where thoroughfares intersect, and four or more such conspicuous labels are within sight at once, the effect is more striking than elegant; and the fourfold reminder that one is in the City of Westminster grows somewhat tiresome by its congested iteration.

Nor is the standard Westminster label by any means a thing of beauty. The best that can be said for it is that it is certainly legible from the other side of the

essential parts. There is certainly no need to search for it. It shouts at you from afar, although, for the reason already stated, its message may not be quite clear until you get near enough to correct the halation. The Underground Railway labels its stations with white lettering on a dark blue ground, and as regards distinct visibility this combination is very effective; although I dare say there are many persons who would agree with me that a dark blue background is aesthetically abominable. This same combination of blue and white, if memory does not play me false, is used for the uniform labelling of the streets of Edinburgh, where the melancholy tint combines with the uncompromisingly inelegant and baldly utilitarian block-letters to produce a most depressing effect on the passer-by. If it be reprehensible "to paint the town red," it is no merit to paint it, *passim*, in the peculiar hue of melancholy mania; and the inelegance of the lettering is the more deplorable from its strong contrast with the beautiful eighteenth-century characters, effective but unobtrusive, and as a rule beautifully proportioned to the scale of the building, which smile serenely upon us from the fascias of the shops in Princes Street.



The Edinburgh labels, I believe, are destitute of framework. The woodwork surrounding the Westminster plates is rather too heavy, perhaps to give it the necessary strength for fixing. One's first impression of these plates—an impression that probably in many instances remains uncorrected—is that the labels are printed from type on paper, and framed and glazed. This idea, as I have shown, is quite erroneous; but it ought not to arise, because it not only suggests the cheapest and most unenduring (and unendurable) form of street label, but one that, for these and for other reasons, would be indefensible. On the whole, I do not think that the Westminster plate is a good model for imitation; nor do I think that it is possible to devise a plate that shall be uniformly appropriate to all styles of building and all situations on or about a building.

Generally, the Westminster plates are fixed on the corner house, at a little below the level of the first-floor window; but occasionally, as in the case of the Ashley Place label here shown, it is fixed on area or forecourt railings. The latter position seems to be in high favour in the suburbs, and is no doubt advantageous where forecourts are extensive, and where consequently a plate attached to the house would be too remote from the road, or might from other causes be rendered wholly or partly invisible. For example, the only label I could discover designat-

ing the High Road, Lee, was on the last house where one would have expected to find it—that is to say, at a point about a quarter of the length of the road, instead of where the road begins (or ends)—and since it is most effectually masked by a number of beautiful flowering trees, it was only by chance that I happened to discover it. In another case in the same district, at a street corner, the ampelopsis from the front garden has crept round the side of the house, and clearly a ladder must be brought into use at frequent intervals to keep the creeper off the plate.

Some further examples from the same district are doubtless typical of the practice in other suburbs. Formerly it was the custom to paint a white background on the wall of the house, and thereon to paint in black letters the name of the street. This absurdly primitive and expensive process is now being superseded by the adoption of cast-iron plates showing the name of the street in raised letters—dark, on a light ground. Where, as in the case of the Murillo Road example, these plates are within easy reach of the smallest child, the raised letters offer an irresistible appeal to intuitive artistry, which is expressed more or less broadly in white chalk. Similarly, a low-fixed white board, like that from Baring Road, is fortunate if it escapes the delicate attentions of the errand boy. Certainly the labels should not be within his reach.

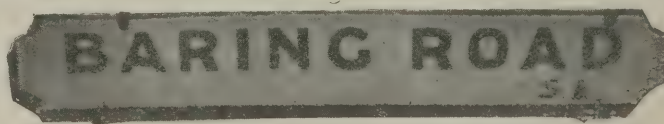
Street-corner boards indicating churches, etc., illustrate a pious custom that, while doubtless admirable in intention is apt to be rather unedifying in aesthetic result, and were perhaps more honoured in the breach.

As to the matter of direction labels, I notice that some small attempt of the kind is occasionally made. You will sometimes find a plate inscribed, "So-and-so Street, leading to such-and-such Square," and so on. This is doubtless very useful—by daylight; but I have an idea that a specially designed lamp standard, not necessarily inartistic, should show, by night as well as by day, a complete list of the subsidiary turnings in a main street, so that the wayfarer might know at a glance which main street to strike in order to come upon the side street of which he was in search. Church, post-office, fire station, or other public-utility building, should find a place in the list.

I had hoped to find in the City of London some exemplary street name-plates, but my search was disappointing. The names of streets, courts, and alleys seem to be indicated in every conceivable variety of bad taste. The most prevalent, and, on the whole, the most efficient, label seems to consist of separate letters of enamelled iron—white letters on dark-blue ground—gathered together in a grooved frame (or, where the name is a long one, in two or three grooved frames), in the manner in which infants are taught word-building. The resultant appearance is exigent and patchy; and in several instances in which three frames have been found necessary, the relationship to each other in which they have been placed seems to have been determined by the momentary whim or mood of the fixers. Given three frames, their possible relative positions are fairly numerous; and in the City most of the legitimate possibilities seem to have been realised. The various ways in which those combinations are grouped and spaced shows an



road, and that the lettering is inoffensive as to style. The label appears to be made of some vitreous material, and the lettering is black, except "S.W.," which is sometimes of a paler colour, on a white ground. I do not think that a white ground tends to legibility at a distance. It sends out a sort of halation, which rather swamps the lettering, or at least to blur its edges and render its outlines hazy and indefinite. A reversal of the colours would give greater sharpness to the lettering—that is to say, light lettering on a dark ground would stand out more distinctly than dark lettering on a light ground. The Westminster label as a whole is more conspicuous than its



For the Johannesburg Art Gallery Mr. Havard Thomas has been commissioned to execute in bronze his statue of "Thyrsis," the wax model of which is at present exhibited in the Royal Academy. This has been brought about through the generosity of Mr. Max Michaelis.

The method of setting up perspective here described has several marked advantages over the ordinary more cumbersome systems. It is based upon the elementary method of setting up an auxiliary elevation of the object and a section of the picture plane and drawing side elevations

We fear there is not very much to be said for the present exhibition of the New English Art Club. Fine effects of lighting there are in such open-air pictures as Mr. Von Glehn's "New England" and "The Picnic"—the latter a large painting of a group of people under trees, through which come dashes of sunlight, while a girl who has been bathing pushes her way back through the bushes in her swimming garment; altogether a very joyous kind of picture. Mr. W. Rothenstein's "The Princess Badroulbador," three children in Orient-

tal costume, is a fine piece of colour, but the heads are the least satisfactory part of the picture. They are not, however, studiously ugly, as we find so often to be the case in these exhibitions. Mr. Orpen paints a three-quarter length under the title, "The Chinese Shawl," very clever and effective in the draperies, but with a face of the most unattractive character; and, again, in his almost grotesque picture, "The Café Royal," we find a composition of gilded ornament and personages of the lowest type; and Mr. Orpen can paint so beautifully if he chooses! Miss Alice Farmer's seascapes are, as usual, full of air and brightness. Among other things that come as moments of refreshment to the eye amid so much that is eccentric and ugly are Mr. Mark Fisher's "Spring"; Mr. Sargent's brilliant sketch called "Fabalas"; Mr. Von Glehn's "The Green Hat," a portrait in which for once we are allowed to see a pretty face; Mr. Somerville's still life painting, "Honesty and Other Things"; and Mr. Shepherd's really pleasing and interesting interior with figures, entitled "A Music Party," which seems quite out of place among its surroundings. Mr. Sydney Lee would be wiser to keep to the architectural subjects which he paints so well; his figure picture of "The Gendarme and the Peasants" is not a success.

Plaster Reproductions of Sculpture.

At the Gallery of the Medici Society in Grafton Street is a collection of "plaster reproductions of antique, Renaissance, and modern sculptured masterpieces," by Miss Nelia Casella. Miss Casella's coloured gesso bas-reliefs have for years been familiar to frequenters of the Royal Academy sculpture room. What she has done in the works exhibited at the Medici Gallery has been, apparently, to take casts from sculpture and work them up into an exact resemblance to the original material. One of the best of these appears to have been oddly misnamed in the catalogue; this is a bust by Mino da Fiesole, worked up in the plaster by markings and colour to a perfectly realistic representation of a head carved in wood, yet it is marked in the catalogue as from a marble original. This must be a mistake! There are reproductions of works by Pollainolo, della Robbia, Donatello, Desiderio di Settignano, and other Renaissance artists, all exceedingly well done. We take it that No. 11, entitled "Minerva (imitation of the Renaissance style)," a splendid profile in bas-relief, is the design of Miss Casella herself. It is one of the best things in the collection, and is in the very spirit of Renaissance art. The collection is on view till June 22nd.

ARCHITECTS' FEES.

By consent, judgment has been entered for the plaintiff for 25 guineas and an agreement that the defendant shall return all drawings in the action raised by Mr. William Davidson, architect, of Edinburgh, against the Rev. Charles Wilton Prangle, Bexwell Rectory, Downham Market, Norfolk, which had been set down for trial on May 30th. The claim was one for 50 guineas for services rendered by the plaintiff in preparing designs for a proposed restoration of Potter Heigham Church, Norfolk, and the defence was that any work which the plaintiff had executed was of the nature of an expectation that he was to be the architect in the event of the restoration being proceeded with. The defendant had accordingly denied employment.

LONDON BUILDING TRADES AND THE TRANSPORT STRIKE.

Builders, in common with others who are more or less dependent on the water-borne transit of goods, had just begun to congratulate themselves on the impending termination of the transport workers' strike when it suddenly entered upon a disconcerting new phase.

At a conference of the societies affiliated to the London Building Industries' Federation, held on Saturday last, the following resolutions were unanimously carried:

1. That this Conference, representing the whole of the building trade, withdraw all their members now employed by the Port of London Authority forthwith.

2. That societies affiliated to this Federation instruct all their members to cease work at once in shops or on ships on the River Thames if non-union labour is brought in to do the work of the members of the Transport Workers' Federation.

The immediate effect of this was that several thousands of men were expected to "down tools" on Monday, and that where they are requested to work on the Thames generally with non-union men, others would also cease work.

Saturday's conference was attended by nearly eighty delegates, and an idea of the trades represented, and consequently concerned in Saturday's strike, may be gathered from the following list of the industries represented: Amalgamated Society of Carpenters and Joiners; General Union of Carpenters and Joiners; National Association of Operative Plasterers; United Operative Plumbers; National Amalgamated House and Ship Painters and Decorators; Engine and Crane Drivers; London United French Polishers; Electrical Trades Union; General Smiths, Fitters, and Hot Water Engineers; National Society of Smiths and Hammermen; Operative Stone Masons' Society; Amalgamated Society of Woodcutting Machinists; United Builders' Labourers' Union; Gasworkers' and General Labourers' Union; Navvies and General Labourers' Union; United Order of General Labourers' Union; Operative Bricklayers' Society.

The Conference lasted over three hours, and during the sitting a deputation from the Transport Workers' Disputes Committee, consisting of Mr. Ben Tillett, Mr. J. Jones (secretary), and Mr. Cone (chairman of the London district), attended and reported on the present condition of affairs so far as the London dispute was concerned. The resolutions were referred to the Executive Committee of the London Building Industries Federation to carry into effect, and the men received their orders by first post on Monday morning.

As the whole of the maintenance staff of the Port of London Authority is affected, the matter assumes considerable importance, and serious added difficulties will be thrown in the way of those responsible for the management of the huge docks under the Authority's control.

It was stated that the calling out of representatives of the building and affiliated trades in the Port of London was not only done on sympathetic grounds, but because the members of the federation had themselves serious matters of dispute with the Port of London Authority.

In order to obtain authoritative information upon so important a crisis, a representative of this journal called on Mr. Thomas Costigan, the secretary of the London Master Builders' Association, who, on Monday, stated that in his opinion this new phase of the strike of transport

workers had no immediate bearing on the threatened general strike in the building trades. These two movements, said Mr. Costigan, are quite separate and independent. Although certain men connected with the building industry—such as ships' carpenters and painters—are concerned in the present strike at the dockyards, the trouble, as Mr. Costigan pointed out, is primarily due to the employment of non-unionists. Moreover, Mr. Costigan is very hopeful that there will be no strike in the building trades during the present year. The negotiations between the L.M.B.A. and the representatives of the men have been conducted with the utmost fairness on both sides, and there is every prospect of an amicable settlement at an early date. This is indeed welcome news in a moment of anxiety and depression, and we are glad to be able to announce it.

ART AND ADVERTISEMENT.

"Every Form of Art is Advertisement" was the subject debated at a dinner held on Saturday evening at the Belgrave Club, London, W. Mr. John Hassall, in opening the debate, said that in the earliest days the drawings done by prehistoric man in the cave dwellings were not "Art for Art's sake." They were advertisements or tokens used by the tribes, and were still with them at the present time. These drawings nearly always represented animals, and among the living artists who still scratched, and whose names recalled the old tokens, many of them were direct descendants from the old cave men, only they did not know it. The Sphinx was only an advertisement for the adjoining temple, and it was not with any idea of keeping the thing quiet that they made it with such a huge head, for if the rock had been larger the Sphinx would have been bigger. The hieroglyphics on the mummy cases, and even on the Pyramids, were intentional advertisements of the departed. The Greek art was such an advertisement for themselves that when Rome took the top place among the nations she imported all the finest Greek artists available to decorate Rome and in order to learn from them. The Italian Renaissance was also purely advertisement. They wanted to get the people into the churches, and they painted religious pictures inside, so that the pictures could not be seen without entering the church. Stained-glass windows were for the same idea; people had to go inside the church to see them.

The beautiful recumbent stone effigies of crusaders and bishops and others were only made to advertise the families of the deceased. At the present time he was given to understand that every artist in an exhibition hoped that his picture would attract more attention than the other contributions, either on account of the idea, the technique, or the frame. If it was "Art for Art's sake," they would be just as pleased to see their picture standing in the passage. Every portrait painted was obviously a personal advertisement, for no one ever heard of the portrait of a mayor being painted without his chain of office, or an officer without his medals. And the people who got free advertisement, like Guy Fawkes or Bernard Shaw, really did not require it.

Mr. Walter Crane said that a remarkable light had been thrown on the early tribal habits of man. He had often been struck with the magnificent possibilities of the modern poster, but he always felt that from the sublime to the ridiculous was but a step, and it was a step that was frequently made.



General View from Sea Side.

NEW PAVILION AND CONCERT HALL, MARGATE.

ERNEST A. BORG, C.E., AND STANLEY C. RAMSEY, A.R.I.B.A., JOINT ARCHITECTS.



View from Land Side.



Detail of North-West Corner and Entrance Pavilion, Sea Side.



General View from Sea Side.

NEW PAVILION AND CONCERT HALL, MARGATE.
ERNEST A BORG, C.E., AND STANLEY C. RAMSEY, A.R.I.B.A., JOINT ARCHITECTS.



NEW PAVILION AND CONCERT HALL, MARGATE: DETAIL OF ONE CORNER OF THE CONCERT HALL.
ERNEST A. BORG, C.E., AND STANLEY C. RAMSEY, A.R.I.B.A., JOINT ARCHITECTS.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

OUR PLATE.

The New Pavilion at Margate.

The site for the new pavilion and concert-hall at Margate was formed by removing the cliff at the old Fort Green, and the building was erected in the opening thus made. This was rendered necessary by the fact that certain houses facing the sea possessed rights of uninterrupted views, which made it impossible to put any building above the promenade.

The concert-hall was sunk so that the floor is about 8 or 10 ft. above the level of the sands and about 35 ft. below the top of the cliffs; the building is protected from the sea by a strong retaining wall. The roof of the pavilion is level with the cliff promenade, which it links up, forming a continuous walk over the building.

The principal elevations are towards the land and the sea and the concert-hall proper, which occupies the greater part of the site, is screened on these sides with glass fronts, affording the spectators an uninterrupted view over the sea, and directly connecting the hall with the open-air theatre on the land side. The stage is placed in the centre of this side, and is available for performances both from the arena, which is designed somewhat on the lines of a Greek theatre, and from the concert-hall. In wet or cold weather the south part of the stage can be shut in by means of folding shutters and the audience will then be in an enclosed hall.

The concert-room is 140 ft. long and 95 ft. wide, the central portion of which is 55 ft. in width, and the roof over forms the promenade already referred to; this is supported by curtain walls with windows at regular intervals, carried by sixteen Corinthian columns.

There are two galleries for spectators, so arranged that they can be used for orchestral and choral performances. They are approached from the hall by four wide

stone staircases. At either side of this central space are side wings 20 ft. in width and about 18 ft. high from the floor to ceiling, with four entrance halls, one at each end of these wings.

Provision has been made for large reading and refreshment rooms, with lavatory accommodation for both sexes on the ground floor, and rooms for the staff and management over.

The rooms for the performers and bandmen are placed beneath the stage.

The excavated portion of the ground on the land side of the pavilion is laid out as a winter garden, with terraces and winding paths protected from the north and east winds; these paths give access to the concert-hall at the ground-floor level, while additional entrances are provided over the roof of the colonnade at the back of the open-air theatre.

Altogether accommodation has been provided for about 5,000 persons—2,500 inside the building, 2,000 in the arena and on the upper part of the colonnade, and 500 on the balcony and promenade facing the sea. Externally the building is finished with Portland cement stucco coloured to a creamy white, and the interior of the concert-hall is carried out in plain white plaster with fibrous enrichments. The architectural treatment is very Greek in feeling, and there is a faint suspicion of French influence. The general design of the concert-hall is suggestive of the work of the French *néo-Grec* School, and this is particularly evident in the character of the details.

The contractors were Messrs. T. T. Denne, of Walmer; the steelwork was carried out by Messrs. Goddard, Massey, and Warner, Nottingham; the internal decorative plaster work by Mr. Gilbert Seale, London; the external plaster work by Messrs. Nicholls, of Coventry.

The building is the joint work of Mr. Ernest A. Borg, C.E., the Borough Engineer, and Mr. Stanley C. Ramsey, A.R.I.B.A., architect.

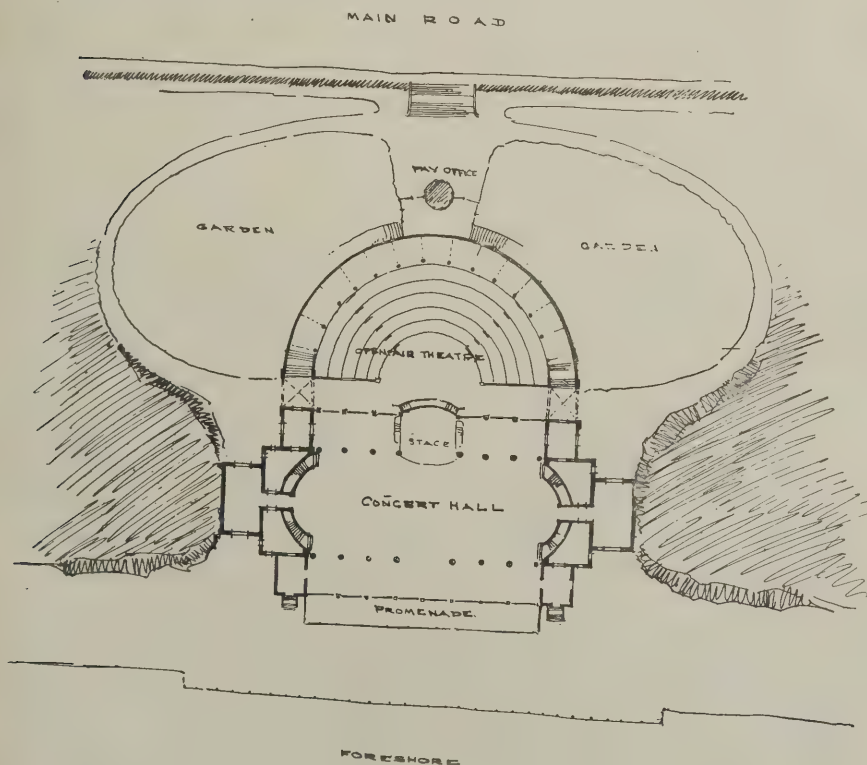
FIRE PREVENTION NOTES.

A Prolific Cause of Fires.

A contemporary is much struck with "the great extent to which fires in this country owe their origin to carelessness." Yet one would have thought that the most obvious thing about fires was that carelessness of one form or another was at the bottom of almost every outbreak. The specific kind of carelessness to which our contemporary refers—that of throwing down lights—is only one among many, but it is the one that receives most attention simply because it is the one that is most common and obvious. But is not this gross carelessness symptomatic of the general public apathy with respect to fire? An un-instructed public could not be expected to restrain the natural impulse to fling down a smouldering match or the end of a cigar or cigarette without a thought as to the possible consequences. The sense of moral responsibility in such matters is not, as it should be, persistently and patiently developed in the home and in the school; and it is because of the prevalence of this crude ignorance in purely elementary matters that so little progress is made with those that are more advanced. The public conscience with respect to fire prevention has not been awakened. In the United States an effort is being made to arouse it by making penal the throwing down of lights, and a similar proposal for our own country should not lack supporters, considering that, of the fires that occurred in London alone during 1911, no fewer than 1,308 cases are attributed to the careless throwing down of lights.

Ignorant Carelessness and the Remedy.

A few prosecutions of those guilty of the criminal folly of throwing lights about would do more than discourage this insane practice. It would go some way towards establishing a better all-round appreciation of the importance of fire-prevention. If the subject received due attention in our elementary schools, another very prolific cause of fires would be minimised. The servant-maid would at least know better—even if she did not invariably apply the knowledge—than so to dispose of smouldering ashes as to increase very largely the number of outbreaks of fire. Then, with the removal of elementary ignorance, and its concomitant crude carelessness, would come the realisation that fire-prevention precautions would be better worth while. Of course, theoretically, the greater the prevalence of danger from common carelessness, the greater the need for fire-prevention precautions, and this theory certainly operates to a certain extent. But, on the other hand, the advocate of fire-prevention construction is commonly met with the objection, "What is the use of my taking all these elaborate precautions when they may all be instantly nullified by some reckless fool flinging a lighted match or cigarette-end among the inflammable goods?" This is at all events a very effective excuse, although it will not bear a strict examination as to essential soundness, but most of its force would be lost if culpable carelessness became punishable by law. Already the smoker has been taught that he may not foul the floor; it would therefore be the easier to teach him, on similar terms, that he may not with impunity fling fire about. Then probably the constitutionally conservative (not to say parsimonious) building client would shift his ground, seizing



NEW PAVILION AND CONCERT HALL, MARGATE: SKETCH PLAN.
ERNEST A. BORG, C.E., AND STANLEY C. RAMSEY, A.R.I.B.A., JOINT ARCHITECTS.



NEW PAVILION AND CONCERT HALL, MARGATE: ENTRANCE TO OPEN-AIR THEATRE.
ERNEST A. BORG, C.E., AND STANLEY C. RAMSEY, A.R.I.B.A., ARCHITECTS.

on the excuse of people having become so careful as to render elaborate fire-prevention precautions unnecessary! The normal man, however, always feels that a movement seen to be good ought to be appropriately supported. Surely, if somewhat slowly, the cult of fireproof prevention is growing, and the proposed American enactment with regard to light-throwing is symptomatic of the fact.

The of the destruction by fire
Archæologist's (last month) of what is
Arch-Enemy. described as "a thirteenth-century house," even though one does not overlook the possibility that the earliness of the date may have been exaggerated by a century or so. Whether or not Hardham Priory, near Pulborough, in Sussex, was correctly described as a thirteenth-century building is now, alas, of considerably less interest than it was before the fire, which has left only the bare walls standing—whether or not in a condition to admit of preservation is not recorded, but one hopes for the best, since houses of anything approximating to the date indicated are becoming very scarce. The fact that fire is the archæologist's arch-enemy, destroying sooner or later all that he holds precious, should move him to take action with the object of preventing its ravages.

Has it occurred to the
Ancient Society for the Preserva-
Monuments. tion of Ancient Monu-
ments to take any steps
to preserve such monuments from the most prolific cause of destruction? If not, they might render excellent service by specially addressing themselves to this point. A White Paper that has just been presented to the House of Commons contains "Reports from His Majesty's Representatives

Abroad Showing the Systems Adopted in Certain Foreign Countries for the Preservation of Ancient Monuments." Fifteen countries are included in the inquiry, but in no single instance is it made clear that fire, the most destructive agency of all, is specifically taken into account. Indeed, so far as a rapid glance serves to determine the point, it does not appear that, in all the twenty-eight pages of which the White Paper consists, the word "fire" is once mentioned, although it may reasonably be presumed that such a contingency cannot have been overlooked, but is probably implied in such provisions as that of the Church Inspection Law of Denmark, which enacts that cathedrals and other important churches are to be placed under the supervision of a special council consisting of "two architects and an archæo-

logist"—an admirably balanced proportion from the architectural point of view!

"Monuments" that are worth preserving are, in spite of the popular misconception of the word as referring to something solidly stony, mostly things that will burn; and to this effect the archæological societies should take to heart the derivation of the word—from *moneo*, "I warn." The Commission on Ancient Monuments has provoked a crop of Parliamentary Bills and White Papers: is it not time that we had a Commission on Fire Prevention? Its conclusions should be of the utmost practical value for the preservation of what is standing as well as for guidance as to future construction.



INTERIOR OF CONCERT HALL, MARGATE.

BUILDERS AND THE INSURANCE ACT.

With regard to the effect of the Insurance Act on the building industries, among the many difficulties that are likely to arise, not the least is that of deciding exactly what workers are included under or are excluded from the operations of the Act. An Umpire has been appointed to consider and decide upon such points, and, pending the publication of his decisions, the following views of a well-qualified expert will be found interesting. They are of course unofficial.

THE approach of July, in which month the Unemployment Sections of the Insurance Act will come into force, will naturally cause those engaged in any of the insured trades, either as employers or workmen, to become keenly interested in their standing in relation thereto. Amongst these are the men engaged in the building trade and allied vocations, such as constructional work in docks, railroads, bridges, etc. The part of the schedule of the Act which mentions these vocations is perhaps worth quoting in full so far as it affects readers of this journal. It is as follows:

"(1) Building; that is to say, the construction, alteration, repair, decoration, or demolition of buildings, including the manufacture of any fittings of wood of a kind commonly made in builders' workshops, or yards.

"(2) Construction of works; that is to say, the construction, reconstruction, or alteration of railroads, docks, harbours, canals, embankments, bridges, piers, or other works of construction.

"(7) Sawmilling, including machine woodwork carried on in connection with any other insured trade, or of a kind commonly so carried on."

Wide as this schedule is, any practical builder will see at once that there are many employers and men engaged in work which is on the borderline of the Act, and many applications have been made to the Umpire appointed under this part of the Act for his decision on crucial points. The following is a list of the vocations which have been under consideration with regard to their position under the Act. The footnote in each case is the present writer's opinion as to what the decision should be:

Masons.—Banker hands, described as working stone with chisel and mallet to finished dimensions in quarrying districts and generally in connection with building operations.

NOTE.—These workmen are preparing work to be afterwards used in a building. They are not necessarily stone fixers, although possibly capable of doing the work. They occupy a relatively similar position to joiners in a shop who are included under part 7. It would therefore appear to be logical that they be included.

Fitters, joiners, smiths, bricklayers, and their labourers, employed solely in the work necessary to the erecting, driving, and upkeep of plant and machinery used in the mills and in the upkeep of the premises of a firm whose business is that of seed crushers, oil cake manufacturers and oil refiners.

NOTE.—The business of the firm is immaterial. The men are engaged in building repairs and machinery repairs principally, with such new work as may be necessary. As the work of construction, alteration, and repair of buildings and every branch of engineering, are included, these men should come within the Act.

Brickworks.—Persons engaged in (a) making stock bricks by machinery; (b)

the burning of bricks by open clamp fires.

NOTE.—Brickmaking is in effect the creation of raw material for builders. It occupies practically the same position as making cement or plaster. It is true they are made to finished dimensions but this is simply a trade requirement and not to order. A brickmaker is not a builder's mechanic by trade custom, and therefore should not be included.

Men engaged in road making, road maintenance, sewer laying, sewer repairs, street cleaning, water inspectors for town supply.

NOTE.—The first four of these are undoubtedly within "construction of works," and should be included. Street cleaning is primarily a sanitary requirement, and should therefore not be included. Water inspectors are appointed to detect faults which cause financial loss to the town. They are not, when so engaged, mechanics, although, as with sanitary inspectors, a due performance of their duties may cause certain works to be put in hand. They should not be included.

Paviors, Platelayers, Labourers, Carters employed in repairing and maintaining tramway tracks and at times renewing same.

NOTE.—Clearly all are working within the term "construction of works," although "tramways" are not specially mentioned in the 6th schedule of the Act. A carter is as particularly necessary to the works as a hod carrier or any other man engaged in carrying.

Bricklayers, Slaters, Labourers, and Carters engaged at times in the maintenance and repair of tramway depôts and other buildings the property of the company.

NOTE.—Should be included when so engaged, as these are distinctly building operations.

Men employed (a) in saw mills entirely in making packing cases.

NOTE.—This is not machine woodwork carried on in connection with any other insured trade, and should therefore not be included.

(b) Joiners, carpenters, and mechanics in engineers' department of soap works.

NOTE.—It is distinctly stated in the Act that it is work done, and not the employers' business, that has to be considered. Therefore these men should be included.

Men engaged in Dye Works as painters.

NOTE.—If on building repairs are certainly included. As before stated, the business of the firm is immaterial.

*Masons** engaged partly on monumental memorials and partly on building fronts.

*Masons** engaged in monumental work with mallet and hammer and chisel, preparing monuments and erecting same in cemeteries or public places.

*NOTE.—To take these together, a monumental memorial of the nature of the Prince Albert Memorial in Hyde Park is undoubtedly a work of construction. An ordinary tombstone in a cemetery hardly falls within this description. Between the two there is a wide range. Statuary, drinking fountains, chapels, may all be

memorials. If reference be made to the business of the employer, nothing definite is gained, because small builders often erect tombstones. As the work is that of dressing stone, and this is principally a building operation, the men should be included.

Masons engaged with hammer and chisel in preparing paving stones for foot-paths and setts for carriage ways.

NOTE.—This is an integral part of a work of construction and the men should be included.

Men engaged in Polishing Granite and Marble for use in connection with buildings.

NOTE.—See previous note.

Stone Sawyers (machine) and other machinists employed in dressing stone.

NOTE.—If sawing stone for market these men should not be included; but to given dimensions, and if for the direct purpose of building or use in works of construction, yes.

Cutting Stone with Hand Saws for use in connection with buildings or works of construction (a) in quarries, (b) in stone-dressing yards attached to quarries, (c) in stone-dressing yards carried on as separate businesses or in connection with the business of a builder, (d) on building jobs.

NOTE.—The men should be included in each instance if the work when finished is for direct use in a building or work of construction. If only a preparation of raw material, then no.

Men engaged in Quarrying Stone, including the process of scabbling or other rough dressing.

NOTE.—If the work is to be used as it leaves the quarry, yes; otherwise, no. There must be a distinction between ordinary quarry work and building work. Quarries are not included in this part of the Act.

Cabinet Making.—Men employed in making staircases, wall and ceiling paneling and general house fittings in hard wood made in shops by those who may or may not be employed to fix the same in the house.

NOTE.—As men engaged in the manufacture of any fittings of wood of a kind commonly made in builders' workshops or yards are included, it appears probable that these men mentioned above would also be included.

Cabinet Makers and Fitters engaged in machining and putting together school furniture of a movable description and not usually made in a joiners' shop, also church furniture of the same description that does not form part and parcel of the building fabric.

NOTE.—This work is not within the scope of the building trade, and therefore should not be included.

Bridge Carpenters.—Maintaining all timber work in the various bridges on a company's railway, including the inspection and replacing of defective material.

NOTE.—This is undoubtedly work of repair. It is not specifically mentioned in the schedule, but may be easily termed reconstruction, although only on a small scale, and therefore appears to be included.

In considering these points it should be remembered that the Board of Trade can rule out any description of labour, even after the Umpire has decided it may be within the Act. For instance, carmen when employed in the building trade may be excluded, because their work is only incidental to the trade of the employer, and they are not builders' workmen in the correct sense.

COMPETITIONS.

The Australian Federal Capital.

The assessors in this competition, with the conditions of which, it will be remembered, the various organisations of architects were in disagreement, advising their members not to compete, have made the following awards: 1 (£1,750), Walter Burley Griffin, Chicago; 2 (£750), Eliel Saarinen, Helsingfors, Finland; 3 (£500), Alfred Agache, Paris. The assessors were Mr. J. H. Smith, Mr. John Kirkpatrick, and Mr. J. M. Coane.

The judges of the architects' designs for the Australian Federal capital city at Canberra had finally reduced the number of plans under consideration to six. These designs, the "Westminster Gazette" states, were all for a radial system of construction, and the architects who submitted them are, it is understood, none of them British. It has been suggested that two prizes may go to Germany and the other to the United States. The plans, generally, take a wide range. There are castles and towers and minarets and lakes and rolling streams, and provision for Parliament buildings which must outpace the dream of the most reckless Finance Minister. There is a gorgeous residence for the Governor-General in some; a luxurious palace for the Prime Minister in others. It is estimated that ten years will elapse before Canberra City will be sufficiently far advanced in being to house the Federal Parliament.

Whiteley Park Homes.

In the limited competition for laying out the site for the Whiteley Homes, which is to be known as Whiteley Park, the scheme submitted by Mr. R. Frank Atkinson was selected. Mr. Walter Cave, F.R.I.B.A., was the assessor.

Society of Architects' Travelling Studentship.

The travelling studentship (£25 and silver medal) for designs for a town hall to cost not more than £30,000 has been awarded to Mr. F. Morrell-Maddox, Burton-on-Trent.

Council School, Port Sunlight.

Messrs. George Bradbury and Sons, of Liverpool, have been appointed the architects to carry out this work.

LIST OF COMPETITIONS OPEN.

JUNE 14. ADDITIONS TO HOSPITAL, CONISBROUGH. — Doncaster and Mexborough Joint Hospital Board invite competitive designs (in sepia or Indian ink) for additions to their isolation hospital. Apply, H. M. Marshall, Clerk to the Board, Union Offices, High Street, Doncaster.

JUNE 24. KING EDWARD WELSH NATIONAL MEMORIAL. — Sketches for two sanatoria, one in North Wales, 150 beds, the other in South Wales, 250 beds. On preliminary sketches, not more than six architects will be selected to send full plans and details. Particulars from Secretary, Welsh National Memorial Offices, Newtown, Montgomeryshire.

JUNE 26. BATHS, BIRMINGHAM. — Twenty guineas for second, ten guineas for third design. Apply, Superintendent Engineer, Kent Street, Birmingham.

JUNE 28. TOWN PLANNING, HALE. — Premiums of £50 and £25 are offered for a town-planning scheme. Address, Council Offices, Hale, Cheshire.

JUNE 30. TOWN HALL, ETC., PADIHAM. — Premiums of £40 and £20 are offered

for designs for town hall, baths, etc. Particulars, Mr. J. Gregson, A.M.Inst.C.E., Surveyor's Office, Padiham. [Note.—R.I.B.A. have objected to the conditions.]

JULY 1. NEW OFFICES FOR THE PORT OF LONDON. — Limited to the six architects selected in the preliminary competition. [See our issue of April 10, p. 370.]

AUGUST 6. FIRE BRIGADE STATION, CARDIFF. — Cardiff Corporation invite architects to submit designs and estimates in competition for a fire brigade station proposed to be erected in Westgate Street, Cardiff. The Corporation have appointed Mr. A. Marshall MacKenzie, A.R.S.A., F.R.I.B.A., to act as assessor. Particulars on deposit of two guineas (returnable) from J. L. Wheatley, Town Clerk, City Hall, Cardiff.

AUGUST 30. SAXON SNELL PRIZE. — Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace Road, S.W.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN. — The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Applications, accompanied by cheque for two guineas (returnable) to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 1. KING EDWARD MONUMENT, OTTAWA. — Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

NEWS ITEMS.

London University Site.

The Senate of the University of London has appointed a committee to consider and report on the question of an adequate site for the new headquarters of the University.

Change of Address.

Mr. James B. Dunn, F.R.I.B.A., architect, announces that, owing to the acquisition of his present chambers at No. 45, Hanover-street, by the Government, he has removed his office to No. 14, Frederick Street, Edinburgh.

A Reinforced Concrete Pavement.

A reinforced concrete pavement laid in Plymouth, Wisconsin, U.S.A., eighteen months ago has passed through two winters without showing any cracks or flaws, even along the street car tracks. Cypress wood is used for expansion joints, and a new form of rough surface has been adopted. The reinforcement consists of woven wire mesh. The surface finish coat was composed of crushed granite chips ranging from $\frac{1}{4}$ in. to $\frac{3}{4}$ in. in diameter, screenings of the same material from fine

dust to $\frac{1}{4}$ in., and Portland cement mixed in the proper proportions to give a very dense mixture. The reinforcement was placed directly on the concrete base immediately below the surfacing composition.

L.C.C. Fire Hydrants.

The London County Council have accepted the tender of Messrs. Ham, Baker, and Co., of Langley Green, for the supply of all the fire hydrants required for their area during the next three years. Several thousands of these hydrants are used.

Sewer Ventilation.

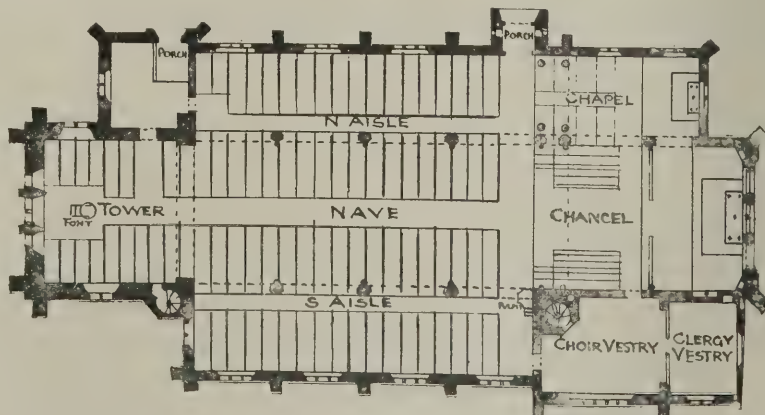
Three tests carried out recently with the patent sewer ventilators manufactured by Mr. R. H. Reeves, at Walton-on-the-Naze, by which cooled and chemically treated air is sent into selected manholes, showed reductions in temperature of 17 deg., 22 deg., and 13 deg. F. respectively 6 ft. below the apparatus, with the injection of 63 cubic feet a minute. The result was an absence of foul air in the sewers, with no possibility of noxious vapour escaping from manholes or being forced through traps by the sudden influx of storm water.

Bristol Society of Architects.

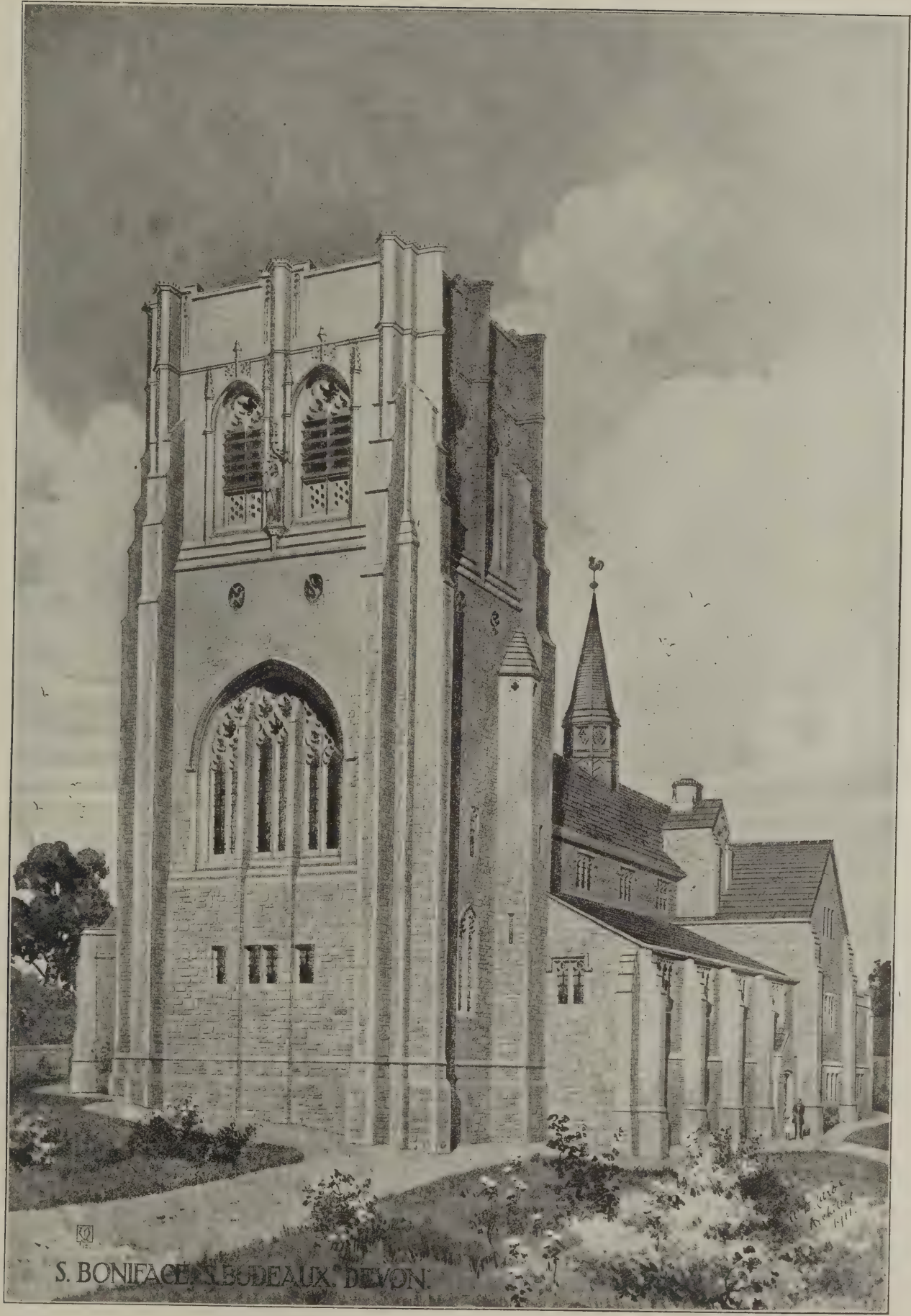
The Bristol Society of Architects have instituted a series of Saturday afternoon sketching expeditions during the summer months. The first of these took place on May 25th, the venue being Chelvey and Nailsea Court. At Chelvey the church and the manor house were visited, after which the party proceeded to Nailsea Court, the residence of Mr. Charles E. Evans. This delightful old house, with its recent additions and wealth of antiques, was studied with great interest. Apart from preserving the original building, Mr. Evans has collected and saved from destruction many valuable architectural features, some of which have been incorporated in the new additions, carried out under the supervision of Mr. Arthur Stratton, A.R.I.B.A.

CHURCH OF ST. BONIFACE,
ST. BUDEAUX.

St. Budeaux is an outlying district of Devonport, lying to the west of the town, and consisting almost entirely of a working-class population. The church is one of those being erected under the Bishop's Three Towns Scheme. The desire for a tower suggested the planning adopted whereby the tower is made an integral portion of the nave, so far as seating is concerned, the bells being rung from a gallery beneath the west window. The church is now in course of erection, Mr. G. B. Turpin, of Plymouth, being the contractor. Local limestone with stone dressings are the materials used. The architect is Mr. W. D. Caröe, F.R.I.B.A., F.S.A., of Westminster.



CHURCH OF ST. BONIFACE, ST. BUDEAUX, DEVONPORT.
W. D. CARÖE, F.R.I.B.A., F.S.A., ARCHITECT.



S. BONIFACE, BUDEAUX, DEVON.

W. D. CARÖE, F.R.I.B.A., F.S.A., ARCHITECT.
(Royal Academy Exhibition, 1912.)

PRACTICAL POINTS IN TOWN PLANNING.

THE proceedings of the National Advisory Town Planning Committee recently printed include four reports that have been respectively communicated by Dr. J. Robertson, medical officer of health to Birmingham City Council; Mr. Henry R. Aldridge, secretary to the Council; Councillor Harold Shawcross, J.P. (with diagrams by Mr. Raymond Unwin); and Mr. H. Lloyd Parry, Town Clerk of Exeter. Below are some practical points extracted from each of the reports.

Number of Houses to the Acre.

Dr. J. Robertson, M.D., B.Sc., reports on "Standards of Limitation of the Number of Houses per Acre, with especial reference to Public Health Considerations."

Those of us (Dr. Robertson writes) who did most to bring about Town Planning as we now know it will recognise that by far the most important object in view was the limiting of the density of the population in our towns, and particularly those towns in which the area covered is so great that the people living at the periphery lock in others residing in the centre and make it impossible for these dwellers to have clean air, or sufficient exercise ground, or sufficient privacy, or sufficient quiet, or freedom from dust. Naturally, Dr. Robertson thinks that the Public Health aspect of the problem is by far the most important one. Next in importance he would place the commercial aspect of it, and then what has been called the general convenience and artistic aspects.

It is somewhat difficult, he says, to demonstrate that density by itself is prejudicial to health. On the one hand we have examples of extraordinary crowding on space without producing what appears to the layman any specially bad results. For instance, we have in the Peabody Buildings a population of 21,000, with a death-rate of 12 per 1,000, and an infant mortality rate of 76 per 1,000 births. On the other hand, we have in one of the central areas of Birmingham a district containing a population of 14,000 persons with a density of one-sixth of that in the Peabody Buildings, but with a mean mortality rate of 23 per 1,000 and an infant mortality rate of over 200. Similar figures could be obtained for every large town in Great Britain. In the poor-class area of Birmingham, however, the houses are surrounded by brass-casting shops and by works of all kinds which produce smoke and noise. There is practically no green space in or near it, everything is dull, gloomy, and soot-begrimed, so that the relatively good density figure does not avail to make people healthy. In the flatted towns of America and of Germany we see clean people living what to outward appearance seem to be relatively healthy lives. In many of these block buildings the density runs up to over 300 persons per acre. While it is possible for the majority of human beings when they reach adolescence to keep themselves in a fairly healthy condition in such areas nobody can maintain that such a density should be tolerated in any but exceptional cases. If we follow the conditions of the child who is born in the flatted house where there is no garden or park we shall find that its condition is a very pitiable one. Until five years of age is reached the child is never out of the house except when its nurse takes it, and then it is only into the more or less contaminated air of the streets. We ought, then, to insist on limitation of the number of

houses for health reasons alone, and the only question that arises is as to a practicable method of doing this. Here we have to be very careful not to commit ourselves to something which will render it less possible to do better work in the future. The subject is so new at the present time that there is a tendency among owners of land and others who deal in it to scout the very idea of insisting on a limitation of ten or twelve houses to the acre. From Dr. Robertson's own knowledge of the essential requirements, he would say that this limit of ten or twelve houses is not excessive, and that financial and other arrangements will require to adapt themselves to such a limit in the vast majority of instances.

Within recent years he had had considerable experience in dealing with consumptives, mostly from the artisan classes. He had found that for the consumptive a shelter which consists of a roof and one screen wall to protect him from the fierce wind is quite definitely superior to a shelter with three sides and an open front so far as the cure of the patient is concerned. Anybody who has experience in dealing with these consumptives under the most unfavourable conditions can but be impressed with the extraordinarily good results which follow keeping them in the open air, and one notices the same results among the nurses who work and live in the open air. Incidentally, he feels confident that there will be a great change in the style of our dwelling-houses in the near future. Except for certain invalids, he cannot imagine any healthy person who has experienced the value of using a sleeping balcony instead of a bedroom ever going back to the closed bedroom.

Theoretically houses should each be separated from one another, but the cost of such separation is great and for economical reasons in the case of the smallest class of dwellings it is better to group ten or twelve houses per acre together—perhaps even those on several acres together—and give the remaining space as playing fields.

There is, of course, a public health aspect to the question of gardens for each individual house in addition to the economic aspect. Most working men, particularly factory workers, are greatly benefited by working in a fair-sized garden. This is not, however, a congenial form of recreation for every working-man, and therefore any regulation specifying that every house shall have its defined garden may be unnecessary. The garden attached to a house where there are only ten to the acre will, if profitably worked, produce sufficient vegetables. But whether you have a garden or a playing field you have at hand something which will enable the smallest children to develop healthfully instead of as at present in a rickety condition like many of our town children.

We need very badly a more sensitive measure of health than we use at present, viz., the death-rate. Possibly the Insurance Act and the compulsory medical inspection of school children will in time do something in the direction of giving us a better measuring apparatus for health, but anybody who is familiar with the skilled artisan classes of this country will recognise that these intelligent people are capable of great improvement in health if facilities existed. Largely their ill-health is due to the fact that they have not realised the value of an abundance of fresh air. Even to a greater extent their condition is a result of their not being

able to get a sufficient amount of fresh air from the present arrangement of buildings and the absence of open-air recreation grounds, playing fields, etc. Dr. Robertson's conclusion is that there ought to be no hesitation in adopting a limitation of, say, ten or twelve houses to the acre in the newer parts of the town.

First Stage of a Scheme.

Mr. Henry R. Aldridge deals in a very practical way with "The First Stage of a Town Planning Scheme," basing his notes on (1) the text of the Act, (2) the procedure regulations, (3) the notes of an interview—arranged by the National Housing and Town Planning Council—with the Housing and Town Planning Comptroller on special points of the regulations, and (4) the procedure actually followed by the following local authorities: the Sheffield City Council, the Chesterfield Town Council, and the Ellesmere Port and Whitby Urban District Council. Maps are included in this report, which also includes appendices giving essential extracts from the official regulations as to town planning procedure, and from the Town Planning Act. This report should prove invaluable to those who contemplate the preparation of a town planning scheme.

Second Stage of a Scheme.

Councillor Harold Shawcross, J.P., gives equally valuable guidance as to "The Second Stage of a Town Planning Scheme." The object of his paper is to state several of the problems that will arise, and to suggest various ways of solving them. Town planning schemes he considers as of two kinds—(1) That for an estate or small garden suburb usually undertaken with the consent or at the initiative of the owner or owners of the land to be planned, who will forward the plan to be adopted by the local authority; (2) the environs of a town—either all or part of them—or a large rural area which is likely to become a residential district, and which it is thought desirable to protect from ill-advised building which would be likely to destroy the amenity of the district.

Mr. Shawcross has some useful remarks on the relaxations of the by-laws or general or local statutory provisions which will probably be asked for. The first will generally be in regard to the making of roads. Most local authorities now insist on a uniform width of road, and some, in addition, a back passage for every house, all of which have to be made in the same way. As the local authority has to maintain these when they are made and taken over, they naturally insist on the best and most expensive road being put down in every case. If they made any exceptions they would be pestered by everyone building to be allowed the same exceptional treatment, and committees and officials therefore stick to the one kind of road to save trouble, annoyance, and wirepulling. Under an adopted scheme, the widths and kinds of roads need only be considered from the point of view of what is desirable for general convenience, and they will probably be fixed upon the map. The question of recovery of the cost when made can be settled by agreement with the owners who are parties to the scheme.

Other relaxations to be allowed by the local authority will be the dispensing with the back passages to houses which are required in many places. This would not be needed where the houses are built in pairs or in rows of four or six, with a passage between every other house to get to the back gardens or yards.

There could also be some relaxation of

the provision which is required in some towns for cross roads at certain distances apart. So long as communication is adequate in the opinion of the local authority this provision might be omitted altogether. The local authority could also modify the stipulation as to having the whole of back yards paved and the fencing round same with brick or stone walls which is often found in town by-laws.

In districts where special building precautions against fire are required, these might be relaxed, *e.g.* precautions as to the building of parapet walls built through the roofs to divide the houses in a row, corbels at the eaves, and some of the stricter by-laws relating to wooden frames and dormer windows; also some relaxation in the height of rooms might be allowed where the regulations insist on more than 8 ft. or 8 ft. 6 in., and also in the thickness of the walls when more than 9 in. is required by the by-laws.

In some places by-laws require the ceilings of bedrooms not to be cut into by the roof. These could be relaxed where there are fewer houses to the acre and plenty of air space. The regulation as to the open space about a house being in a particular position could also be waived, especially for corner plots.

A valuable power will be in the hands of local authorities when bargains are to be made in regard to their control over ancient footpaths and rights of way. These are often at present a hindrance to the proper development of an estate, and it should be possible to get valuable concessions in return for permitting these rights of way to be extinguished.

Such points as these having been conceded by the local authority, we have next to consider what should be insisted on in the scheme as a *quid pro quo* for the above relaxations from by-laws or statutory provisions. First as to the limitation of the number of houses per acre. This, in the kind of scheme we are considering, where there is a definite plan, need not detain us—though it would be well if all local authorities before agreeing to a scheme promoted with the good will or at the initiative of landowners, should fix a standard of the number of houses per acre, below which they would not consider any scheme at all. It should, however, be noted that if it is intended to build houses with gardens of such a size as to be worth cultivating by the tenant, that this would not be possible if more than about twelve houses to the nett acre are put upon the land.

Then the local authority should insist, where the fencing of back yard or garden with durable materials is not required, that a suitable fence or hedge is provided, to be kept in proper condition to the satisfaction of the local authority. Also to guard against houses being sold to persons who may use their premises so as to be a nuisance to the community, that a clause be inserted in the scheme that gardens shall be cultivated in a satisfactory manner and that no fowls be kept, nor animals, at less than a certain distance from dwelling houses, or where they would be a nuisance. Also that any greenhouses or outbuildings to be erected on the land should be approved by the local authority. The areas where the placing of shops should be allowed ought to be definitely fixed, and these should not be permitted elsewhere.

With respect to the proper widths that roads of various descriptions should be made and the style and kind of construction of same, the author suggests several types of roads for the various requirements of towns and rural districts.

For main traffic roads, the minimum

width of roadway should be 50 ft.; minimum width of footway, 12 ft.; minimum space dedicated, 80 ft. This would carry six lines of traffic—as, for example, a double row of tram lines and two lines of traffic on each side. For through-traffic streets, the minimum measurements suggested are:—Width of roadway, 32 ft.; width of footway, 8 ft.; space dedicated, 50 ft. This class of road would take one line of trams in crowded parts of towns and two lines in less populated parts on outskirts. It would take four lines of vehicles.

For local traffic streets, the carriage way should be 24 ft.; the footway, 6 ft.; and the minimum width dedicated 42 ft.; the houses being set back not less than 25 ft. from the centre of the road. The space to be dedicated has been fixed slightly more than the total of the minimum widths of road and footways. This has been done to meet special circumstances that may be met with, such as trees that it is wishful to preserve. In such cases it might be desirable to vary the widths of the roads a few feet. For non-traffic roads, carriage way, 16 ft.; width of footway, 4 ft.; minimum width dedicated, 30 ft.; maximum length—half a mile. Turning places for motors and vans at least every 750 ft. where there is no cross-road. Houses to be set back at least 25 ft. from centre of road.

Mr. Shawcross deals also with open spaces, recreation grounds, parks, etc., and with regard to buildings, the space about them, limitation of number of buildings per acre, their height and character. In preparing the scheme, in limiting the number per acre, it should be sufficient in the case of land that is not planned out in detail, if it be stated that the rule should be so many houses to the acre, but the requirements of the local authority would be satisfied if the average number was obtained over a certain area. A maximum number of houses, more than which should not be erected on any one area, should be stated. The local authority, in its scheme, if the scheme merely limits the number of buildings to the acre, will also have to guard against the possibility of larger buildings being erected than the ordinary house with three or four bedrooms. In residential areas the height should also be limited. Houses should not be built more than three storeys high, or more than a maximum height to be defined. Or this overcrowding could be guarded against in all town-planning schemes by a stipulation that any house, the building site of which covered more than a certain area of land, should have more open space exclusively belonging to it, or that only a certain proportion of the site should be covered with buildings. In the case of large buildings in business centres for shops, stores, offices, etc., of more than ordinary height, there should be provisions made for a certain open space around them. A convenient rule would be "that every person erecting a building should provide an open space on two sides at least equal to the height of such building measured to the top of the main wall from the ground level. A special point to be guarded against in all town-planning schemes will be the subsequent enlargement of houses by adding more rooms, etc., to them. This could be met by the suggestion made above that each house must have only a certain proportion of land exclusively belonging to it covered with buildings, or by a clause enabling the local authority to refuse additions to buildings which would interfere with the amenity of

the air space around the house. Another way would be to have a provision in a scheme that if, say, houses were allowed twelve to the acre, each house should not cover more than 600 square ft., and that no addition should be permitted afterwards of more than 10 per cent., and that any addition should be subject to the approval of the local authority.

It is considered undesirable to fix a minimum standard size of house, but that local authorities ought to have powers to enable them to regulate the number of persons who inhabit each house. It is very desirable that a standard size of rooms should be adopted, if this is possible, under a town-planning scheme. Local authorities may differ as to what the standard should be, but the following, which has been adopted at Letchworth, is inserted here as being a reasonable one and one that has worked well in practice: "Each dwelling house intended for a family must contain at least one living room having a floor area of not less than 144 square feet and containing not less than 1,080 cubic ft. of air space; it must have one bedroom having a floor area of not less than 135 square ft. and containing not less than 1,070 cubic ft. of air space; and no bedroom must contain less than 500 cubic ft. of air space."

The above might be amended in prescribing minimum dimensions for a second bedroom where there are three, as under it two small bedrooms of 500 cubic ft. might be put into a house built according to above.

The Question of Cost.

Mr. H. Lloyd Parry deals with "The Cost to Local Authorities of Town Planning Schemes." He says that the procedure Regulations issued by the Local Government Board prescribe in such complicated detail the steps to be taken in the various stages of the preparation of a scheme that at first one derives an exaggerated impression of the magnitude of the task and of the ultimate cost. It is only after a closer study of these Regulations that one appreciates how much repetition they involve and perceives that the elaborateness of the procedure is designed to meet every possible circumstance of locality. The Local Government Board have been at pains to impress the fact that the Regulations are not intended to be rigid, and that all reasonable claims for dispensing with any of the requirements will be sympathetically considered. He holds that payment of fees for expert advisers engaged for the purpose should in the general case be unnecessary. A satisfactory scheme, he says, can only be evolved by persons who have an intimate knowledge of the physical conditions of the district and the direction and strength of its industrial and residential development. A satisfactory scheme cannot be evolved upon a casual acquaintance; it needs a long and mature consideration. The permanent officials of an authority are therefore in the best position to undertake the task. It will doubtless be found necessary to supplement the official staff so as to meet the formal work involved in the inquiries as to ownerships, the serving of notices, the clerical work, and the preparation of maps, but the heads of the department should be able to undertake all that is required in the way of advising and directing. He concludes with the remark that the Housing and Town Planning Act contemplates that a scheme should be the joint product of the local authority and the landowners interested, and as the benefit contemplated is a mutual one it is mainly

on their agreements with the landowners that the authority can and should depend for the efficiency of their scheme and the avoidance of expense.

These reports, of which it would be difficult to exaggerate the practical value, are published by the National Housing and Town Planning Council, whose central office is at 18, Dulverton Road, Leicester (London office, 6, John Street, Adelphi, London, W.C.).

ANCIENT MONUMENTS.

Some that are Worthy of Preservation.

At last Thursday's meeting of the Middlesex County Council a letter was read from the Commissioners of Works inviting the Council to co-operate in the preservation of ancient monuments and historic buildings, and intimating that where the expense of preserving monuments, of national importance is heavy it might fittingly be defrayed from national rather than local resources. Acting on this suggestion, the General Purposes Committee made inquiries in the county, and now recommended that the following list of buildings, earthworks, and ancient monuments be forwarded to the Office of Works as worthy of preservation:—

THE LONDON STONE.—Said to have been placed on Lammas land at Staines about 1270, with the intention of marking the western boundary of the City of London.

HOGARTH'S HOUSE, CHISWICK.—Where Hogarth spent much of the latter part of his life, and where many of his works were produced. The house is at present in the possession of the County Council, and it contains a large collection of the artist's works.

BURY HALL, LOWER EDMONTON.—Where the death warrant of King Charles I. is believed to have been signed.

HEADSTONE GRANGE, PINNER.—Held by the Archdeacon of Richmond in 1344, and afterwards by various Archbishops as late as 1545.

GRIM'S DYKE, HARROW WEALD.—A very ancient earthwork in the grounds of the mansion of the same name.

AN OBELISK NEAR THE GROVE ESTATE, LITTLE STANMORE.—Said to mark the site of the old Roman station of Sullionacre, where Cassivellanus gained a victory over the Romans.

LAMB'S COTTAGE, EDMONTON.—In which Charles Lamb lived and died.

OLD MANSION IN PYMME'S PARK, EDMONTON.—The residence, in the days of Queen Elizabeth, of the family of the late Lord Balfour of Burleigh (the founders of the House of Cecil).

SALISBURY HOUSE, BURY STREET, EDMONTON.—Where it is reported Judge Jeffreys at one time resided.

BUILDING AT EAST END OF CHURCH STREET, EDMONTON.—In a little consulting room of which John Keats wrote all his sonnets.

MONUMENT IN ACTON PARK.—Designed as a memorial of James Radclyffe, Earl of Derwentwater, one of the leaders in the rebellion of 1715, who was taken prisoner at the battle of Preston, tried in Westminster Hall, and beheaded on Tower Hill on February 24th, 1716.

GARRICK TEMPLE, between Thames Street, Hampton, and the river.

THE OLD PIE HOUSE, WEST STREET, HARROW.—Specimen of old domestic building of uncertain date.

TOWER OF ST. MARY'S CHURCH, HORNSEY.—Supposed to be built with the stones that came from the ruins of Lodghill, upon which (in Harnesey Parke) in very ancient times stood a lodge or castle.

CROMWELL HOUSE, HIGHGATE.—Erected in the seventeenth century, probably by a member of the Springwell family. The staircase is regarded as one of the finest of its kind in the kingdom, and some of the ceilings are also of exceptional interest.

THE TREATY HOUSE, UXBRIDGE.—The venue of the Commission appointed in 1645 to endeavour to settle the struggle between Charles I. and Parliament. The Commission, consisting of sixteen Commissioners each for the King and Parliamentary party, sat at Uxbridge for three weeks, but, however, failed to arrive at any satisfactory conclusion.

Traces of Roman encampments at Heathrow, Harmondsworth, and at Shepperton.

An ancient barn on Sir Samuel Boulton's estate at Totteridge.

An ancient barn at Harmondsworth.

AGRIMENSORIAL MARKS.—Stones at Wealdstone, Whetstone, Sudbury, and Bordestone.

SAXON AND DANISH MOATS.—Camlet, Old Bury, Tottenham (three), Hanworth, Pinner, Enfield, Northolt, Alperton, Acton, Ruislip, Down Barn.

SOCIETY OF ARCHITECTS' EXAMINATIONS.

The Easter Examinations by the Society of Architects were held on April 2nd, 3rd, and 4th, in London, Manchester, Leeds, Cardiff, Birmingham, Oxford, and Dublin, the latter being a new centre. The Council have appointed Mr. A. Alban H. Scott, M.R.San.Inst., examiner in Section IV., Sanitary Science. Mr. R. Willock, F.R.I.B.A., examiner in Section III.A, was prevented by a serious illness from completing his duties, which were undertaken by the Chairman of the Board of Examiners, Professor Henry Adams, M.Inst.C.E.

The following have satisfied the Examiners:—

E. R. Bill (Shrewsbury).
W. Bradley (Bolton).
S. F. Evershed (Northampton).
W. J. Hadley (Carmarthen).
H. Lyons (Dublin).
H. E. Matthews (Yeovil).
D. J. Moss (Peckham, S.E.).
H. Phayre (Egremont, Cheshire).
G. H. Russell (Hitchin).
E. D. Sherlock (Manchester).
R. H. Syms (Isleworth).
R. Thompson (Bromsgrove).
H. A. Wilkinson (Wood Green, N.).

The following students of the Society have obtained Sectional Certificates:—

SECTION I. (ARCHITECTURE).
F. Clemes (Weston-super-Mare).
C. Ford (Reading).
W. J. Isaac (Warrington).
A. B. Johnson (Croydon).
P. Morris (Nelson).

SECTION II. (BUILDING).
W. J. Isaac (Warrington).
W. E. Kelly (London).
L. A. Reynolds (Hull).
F. J. Taylor (London).

SECTION III. (PRACTICE).
H. Best (Whitworth).
H. J. Lurcock (London).
J. Slater (Blackburn).
E. J. Williams (Leicester).

SECTION IV. (SANITATION).
J. A. Grimshaw (Accrington).
H. J. Lurcock (London).
P. Morris (Nelson).
C. F. Overy (Weston-super-Mare).
J. E. Sanders (Liverpool).
J. Slater (Blackburn).
F. J. Taylor (London).
E. J. Williams (Leicester).

THE NEW SLADE PROFESSOR AT CAMBRIDGE.

Mr. Prior's Inaugural Lecture.

Mr. Edward S. Prior, F.R.I.B.A., F.S.A., the new Slade Professor of Fine Art at Cambridge, dealt in his inaugural lecture last week with the use of the capacity of the University to organise art study.

Mr. Prior said that the programme of an archaeological and architectural school must be closely condensed for University purposes, but he believed the programme could be regulated by strictly keeping to the principles of practical art instruction and specialising to this end in the direction of the constructional arts. He emphasised that the only just education of the artist was in making him competent to meet present-day conditions, with the present-day materials of art. Mr. Prior said (as reported in the "Times") that they wanted in Cambridge continuation studies in archaeology and architecture, in which students with the bent of investigation might obtain the habits of observation and comparison on which archaeological discovery rest, and there was another special class, for whose needs a school of archaeology and architecture ought long ago to have been instituted. "The Cambridge curriculum of theology sends out to nearly half the parishes of England incumbents and curates. Many come immediately into touch with some of the finest architecture, and some of the most valuable records of art, that our island holds. Our ancient cathedrals and parish churches come under the care of Cambridge graduates, who often obtain what is practically the power of ownership to do what they will with the ancient religious art. With them lies often the decision whether the genius of ancient English art shall be preserved or destroyed. A knowledge of what is in their hands to guard and secure would seem a part of their education. The tragedy has been that the knowledge has scarcely been given, only by chance, by individual effort, or most often not at all. It is a tragedy that with the best intentions, and often with pathetic exertions to understand, clerical guardians of priceless treasures have been so ignorant (despite a University education), so unstudied in the ideas of religious art, that they have wiped out in the last century a very large part—even the greater part—of the religious art and religious antiquities that 100 years ago our churches everywhere possessed. While there are still art treasures for the Church to keep, would it not be to the advantage of the clerical vocation if clerical students took a course of historical English architecture, and understood what this meant in churches? A school of art preservation in connection with clerical training would also have its proper home in Cambridge in connection with a continuation School of Archaeology and Architecture. In most ages the religious art has been the popular art, and the artist has found his best client in the Churchman. But for the last 100 years this alliance has lost its bond. I could count on my fingers the occasions when acknowledged painters and sculptors of the English school have in the last 100 years been allowed to show their art in our cathedrals and churches. For the most part the edifices of public worship take nothing from any genuine artist. Would it not be an advantage for every candidate for orders to be given the opportunity of associating with and understanding the artist—at any rate to the extent of taking at its worth what in our churches is often degraded stuff?"



CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief, and to write on one side only of the paper.

The R.I.B.A. Elections.
To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The correspondent who, in your issue of May 22nd, signs himself “Member R.I.B.A.,” quotes from a letter written by me which appeared recently in the professional Press, and I note with pleasure that he agrees with my remarks. But he does not quote quite enough. In my letter I suggested that some information as to experience and ability should accompany the list of candidates, so that the voters might have some grounds to form an opinion upon.

As the Institute fails to give us any information, the only alternative is for the candidates to canvass for themselves and to put their own qualifications before the voters. One member has openly and boldly adopted this sensible course in the teeth of the, to me, inexplicable objections to personal canvassing which so many members appear to hold. I hope in the future other candidates will follow so good an example, and we may then see a little more energy and movement in an annual election which is now incomparably dull and sluggish.

J. H. CORAM.

To the Editor of the ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I may point out to your evidently rather angry correspondent, “An Associate of the Institute,” that though the Council of the Institute are pledged to prepare and

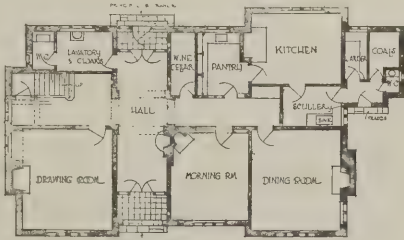
try to pass a Registration Bill, individual members who take no part in the official management of the Institute are not so pledged, and many of them, like myself, look with great regret on the course which the official body of the Institute have pledged themselves to, and which has been practically forced upon them.

I had another reason for making rather a drastic protest against the circular sent out by the Institute Club. I consider the practice of sending round “caucus” circulars to try to influence the voting is a most objectionable one. It is one which I, at all events, resent very strongly.

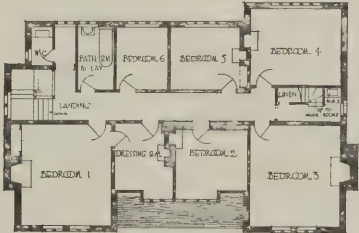
A FELLOW OF THE INSTITUTE.

HOUSE AT WALTON HEATH, SURREY.

This house, designed for a situation close to the famous golf links, has a south-west aspect. The accompanying plans show the accommodation and arrangement of the various rooms. The elevations are rough-cast, with brick mullioned windows, the chimneys and terrace being also of small hand-made red bricks with joints left free from the trowel. The roof is covered with rough hand-made tiles with sweeping valleys. The formal part of the garden, as well as the house, has been designed by the architect, Mr. R. F. Johnston, of 11, Brook Street, Hanover Square, W.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SOUTH ELEVATION



WEST ELEVATION

SCALE 10 0 10 20 30 40 50 OF FEET

HOUSE AT WALTON HEATH, SURREY.

R. F. JOHNSTON, ARCHITECT.

TRADE AND CRAFT.

Claridge's Asphalte.

Claridge's Patent Asphalte Co., Ltd., 21, Surrey Street, Victoria Embankment, W.C., have issued a new descriptive booklet on "The Uses and Fireproof Properties of Claridge's Patent Asphalte." The material, which has been extensively in use since 1838 for roofs, floors, damp-proof courses, linings to reservoirs, etc., is procured from the mines at Pyrimont, near Seyssel, France. In its natural state it is a bituminous limestone in which carbonate of lime and pure mineral bitumen are naturally blended in proportions varying from 7 per cent. bitumen and 93 per cent. carbonate of lime to 20 per cent. bitumen and 80 per cent. carbonate of lime. This rock asphalte is ground to a fine powder and mixed with 5 to 6 per cent. of pure bitumen similar to that contained in the natural rock; a proportion of grit is also added, and the product is run into moulds, forming blocks which weigh about 1 cwt. each, and measure about 1 ft. 6 in. by 1 ft. 3 in. by 6 in. Examples, in section, of the employment of Claridge's asphalte in the construction of standard types of fireproof roofs and floors are illustrated, as are various applications of the material to different classes of work, and the booklet, both in its text and its illustrations, is useful as well as interesting.

A Patent High-Lift Turbine Pump.

The turbine principle is now generally accepted as the ideal for primary machines, as it gives a much higher rate of speed than is possible with machines of reciprocating type, and allows of a far greater amount of work being done in much less space. Messrs. Mather and Platt, Ltd., of Park Works, Manchester, and Queen Anne's Chambers, Westminster, have issued a catalogue illustrating various types of modern turbine pumps of their manufacture. These comprise single and multiple chamber pumps, large and small, and applicable to a large variety of services—for collieries, water-works, marine, fire, and sanitary services, and in many industrial applications. The firm claim to be the original makers of the turbine pump. The first patent was taken out by Professor Osborne Reynolds in 1875, and immediately afterwards Messrs. Mather and Platt built the first Mather-Reynolds turbine pump for Owens College, Manchester, which pump can still be seen at work. The experience gained during a period of thirty years has enabled the firm to make radical improvements in the design, and, consequently, to secure the highest efficiency. The method of driving recommended is by direct-coupled electric motors, but they can also be driven by water or steam turbines, or by high-speed steam engines.

"Architects' Designs in Brass and Iron Goods."

Under this title Messrs. Swain, Verney, and Co., 22, Granville Street, Birmingham, and 46-48, Queen Anne's Chambers, Westminster, issue an illustrated catalogue, consisting of 165 large quarto pages, showing, in particular, many patterns of door, window, casement, and skylight fittings. Some of the mortice locks are shown full size, so that their construction can be examined almost as satisfactorily as by handling the actual lock, and it can be seen that they are of very superior make. Locks for all purposes are shown, and the door furniture covers a very wide range as to purpose, pattern, and mate-

rial. Door checks, door runners, floor springs and guards, and a large number of fanlight openers, casement stays, greenhouse ventilating gear, the McCabe tubular ball-bearing accordion hangers, patent folding partition fittings, and many other items, ordinary and special, are included in a comprehensive, well illustrated, and altogether interesting catalogue. Sections of it, which may be obtained separately, are those dealing respectively with the McCabe tubular ball-bearing door hangers, and with the firm's patent coin-actuated lock for use on w.c.'s, lavatories, etc., at railway stations, in public conveniences, restaurants, etc. These are made to open with halfpennies, with pennies, or with any one or two coins of almost any description, and a special doorspring prevents the door being left open by the user. There are also arrangements by which access can be had to anyone who may be taken ill when locked inside; for ensuring that the coins can be collected by two persons, as a check on possible dishonesty; and for opening the door, for cleaning, inspection, etc., without inserting a coin. The patent grip door springs are fitted with an adjustment, attached to the barrel, by means of which the strength may be increased or reduced to suit any size of door.

Warming and Ventilating Installations.

Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester, report the following recent installations: Patent warm-air ventilating Manchester grates have been supplied to the Rural District Council offices, Durham; to St. John's Schools, Cardiff; and to the Carnarvon Catholic Schools; patent Manchester grates and concealed extract ventilation to the new Catholic schools at Caterham; and Shorland's double-fronted patent Manchester stoves in faience and with descending smoke flues are being installed in the extensions to the Royal Infirmary, Bristol.

Callender's Waterproofing Medium.

"Illustrated Catalogue No. 12," which has just been issued by Messrs. George M. Callender and Co., Ltd., comprises, in addition to eighteen pages of letterpress, a series of more than fifty fine half-tone process engravings, showing various works on which their pure bitumen sheeting has been used. In the text it is stated that bitumen, as distinguished from rock asphalte, came into general use about fifty years ago, and the idea of tempering pure refined bitumen and fashioning it into thin pliable sheets, "so as to obviate the costly and laborious method employed in laying rock asphalte mastic," was first conceived by the late Mr. W. O. Callender in the late 'seventies; and after many experiments the regular manufacture of Callender's pure bituminous dampcourse was begun by Callender and Sons at Millwall early in 1878. The material was first used for covering railway bridges, lining ponds, and for flat roofs, etc., about the year 1880; and it is mentioned that one of the earliest ponds lined—one at Govan, of which a charming illustration in colour is given on the cover of the booklet—was lined in 1885, and remains perfectly watertight. Callender's sheeting is entirely free from coal-tar, pitch, or any artificial product, and the special asphaltum from which it is made possesses a great range of ductility, and is tempered to suit all climates. It is supplied in rolled standard sheets, 24 ft. by 6 ft., and about 3-16 in. thick, each roll weighing about 1 3/4 cwt. Among recent adaptations of Callender's sheeting are its successful use in lining railway subways for passenger traffic, elec-

tric railways for cables and pipes, lining sewage tanks, covering cast-iron pipes laid in ground to prevent corrosion, in engineered foundations to prevent vibration, and for girder seatings. Tests made by Kirkaldy and Son, showing the behaviour of the sheeting under hydraulic pressure and under thrusting stress, are detailed, and a long list of important works, of varied character, in which the material has been used, is included in the booklet; which also contains several sectional and other sketches showing typical applications of the sheeting.

THE LONDON SOCIETY.

At the first meeting of this society, held on May 23rd at the Galleries of the Royal Society of British Artists, Pall-mall, under the presidency of Sir Aston Webb, R.A., the following elections took place: Council—Sir George Alexander, Sir J. Wolfe Barry, Sir Thomas Brock, R.A., Professor Reginald Blomfield, A.R.A., Mr. W. D. Caröe, M.A., F.S.A., Mr. J. M. Dent, Sir Alfred East, R.A., Sir Douglas Fox, Mr. Thomas Gautrey, L.C.C., Mr. C. H. St. John Hornby, Sir J. Pritchard-Jones, Bart., Mr. Philip Norman, LL.D., F.S.A., Sir E. J. Poynter, Bart., P.R.A., Sir Aston Webb, R.A., C.B., Sir Frank Short, R.A., representing the Royal Academy, Mr. Leonard Stokes, representing the R.I.B.A., Sir George Frampton, R.A., representing the Royal Society of Sculptors, and Mr. C. J. Allan, representing the Mansion House Council on Health and Housing. Executive Committee—Professor S. D. Adshead, F.R.I.B.A., and Messrs. Herbert Batsford, C. C. Bradley, Arthur Crow, T. Raffles Davison, Douglas Fox, J. Hutton Freeman, Vincent Harris, A. H. Hodge, Brook Kitchin, W. L. Lucas, D. B. Niven, Professor Beresford Pite, Messrs. G. Stevenson, Carmichael Thomas, R. G. Todd, Raymond Unwin, Paul Waterhouse, Maurice Webb, W. Willett, B. W. Young, and Thomas H. Mawson. Treasurer—Dr. S. Miall. Hon. Secretary—Mr. H. J. Leaning.

POST OFFICE BUILDINGS.

The Treasury have appointed a Departmental Committee to inquire into the system of providing Post Office buildings with particular reference to the alternative policies of renting or building, whether by the Office of Works or the Post Office. The Committee is constituted as follows: Sir F. Cawley, Bart., M.P. (chairman), W. E. Horne, Esq., M.P., H. H. Hambling, Esq., J. Slater, Esq., F.R.I.B.A., Howell Thomas, Esq., F.S.I. The Secretary is L. C. Bromley, Esq., of the Treasury.

Mr. Henry Herbert Hambling is general manager of the London and South-Western Bank. The bank has about 200 branches in London and elsewhere, and its policy has always been distinctly in the direction of acquiring the absolute title to the premises used in its business. Mr. W. E. Horne, M.P., is the president of the Surveyors' Institution, and a director of the Prudential Assurance Co., Ltd. He has represented the Guildford Division of Surrey since 1910. Mr. John Slater, F.R.I.B.A., is surveyor to the Berners estate in Margate. He was president of the Architectural Association in 1887, and vice-president of the Royal Institute of British Architects from 1900 to 1904. He is also a member of the Tribunal of Appeal under the London Building Acts. Mr. C. J. Howell Thomas, F.S.I., is one of the principal valuers in the Inland Revenue Department at Somerset House.

THE ART OF THE PLASTERER.*

BY GEORGE P. BANKART.

MR. BANKART said that he should confine his remarks to an analysis of principles and qualities essential in good plaster decoration. The chief point he wanted to emphasise was that in whatsoever age the art of the plasterer was practised the greatest result was attained by the proper use and development of the particular kind of plaster employed. The many ways of modelling and handling decorative work were due almost entirely to the difference in the nature of the plaster that was used. He would classify these plasters into four distinct headings: First, the "stucco-duro" of the Italians (of carbonate of lime), *i.e.*, the "limestone" of the hills, which was very carefully selected, thoroughly well burnt, and slaked for many years; thumped, chopped, and knocked about, and so toughened that it became very flexible and malleable—so malleable and delicate, in fact, that the die-sinkers used it in preference to wax. Another division was the "parge-work," or the ordinary lime, sand, and hair plaster used for parging flues, differing from the ordinary lime plaster in that it contained road scrapings, cow dung, and ox hair. The third division was "plaster of Paris," or sulphate of lime, which was introduced into this country in the reign of Henry VII., although in general it was not much used until Elizabeth's time. Then there was the modern process of casting in fibrous plaster from jelly moulds.

Stucco-duro.

The use of "stucco-duro" was known so far back as 3500 B.C. In Italy it had been exhumed in the early part of the sixteenth century, and on some of the tombs in Rome executed in the first half of the century could be distinctly seen the incised marks of the metal tool. This work was modelled *in situ*, and was not intended to be seen by daylight; consequently, perhaps, imperfections were excusable, but the work, which was coloured, was very fine and wonderful for all that.

Later, a band of artists trained by Raphael executed much work in Italy and France. Troubles followed in Italy, and this band of artists, in escaping from Rome, became scattered. Some went to Florence, some to Venice, and others to Mantua. A school of "stuccatori" modellers was founded in each place. The art spread all over Italy, and from there to France, where Primaticcio decorated Fontainebleau for François I. This, however, was by no means the first stucco work executed in France.

The first "stucco-duro" work in England was carried out at Nonsuch Palace, on the hill between Epsom and Cheam, Surrey, from where the art, fostered by the Italians, spread sooner or later to Longleat. An English plasterer named Charles Williams, who had modelled at Nonsuch and travelled in Italy, carried out the Longleat work and that on the walls of the Giants' Chamber, etc., in the first Hardwick Hall; this work was of very simple character. In the later hall the frieze in the Throne (4 ft. 6 in. deep) was done by men trained by Charles Williams, and coloured in tempera. The leaves were simply dabbed on in large groups and shaped with a small metal tool or trowel and slightly undercut at the same

time. They were done very quickly and simply; sometimes the birds and animals were painted on the groundwork instead of being modelled. It was found that the material could only be procured with difficulty and inconvenience in those days in this country, because of the marble dust and other ingredients that were necessary.

Parge-Plasterwork.

The art did not live long in the hands of the English plasterers after the Italian fashion, the Englishmen keeping to their parge-plaster and developing an art of their own. The first development in the English plaster ceilings was in the form of very simple panellings formed by beaded mouldings, with little bits of sprigs of modelling stuck at the mitres and angles, and with rosettes, etc., in the panels. Then they added simple rounded mouldings, and this practice gradually grew until they covered the ceiling all over with a repeating arrangement of panellings. This sort of thing continued to develop by degrees, and, although the modelling was exceedingly simple, the work of this period was perhaps the purest and most English. The leaves nearly all took a slight concave form, with now and again convex lumps of flowers, fruit, bosses, and heraldic bearings and devices. Exterior parge work was done practically all over the country, and in London particularly, up to the time of the Great Fire of 1666. The timber construction of the buildings was covered mostly all over with this parge-plaster ornamentation. The plaster was as tough as leather, and weather-proof. Old engravings of London pageants and street processions show the work very clearly. The work was of a simple type, put on with a trowel *in situ*, in panellings, flowerings, in between and under windows, across beams, and in gables and oriel coves. Many examples had been much filled up with whitewash. One very interesting feature about this parge work was that in Essex, Norfolk, and Suffolk (particularly Norfolk and Suffolk) one could pass through various districts and every few miles mark quite a distinct change and type of work, showing that it was done by the native and local plasterer or "dauber," or perhaps mason. They worked in their own little radius and had their own set of patterns, which they varied.

Some Old Examples.

With respect to the Elizabethan period there was an example in Burton Agnes, Yorks, to which special attention was called. The work was from a semicircular vault once existing in Burton Agnes Hall, long since perished. It was of modelled scrolls of roses, done *in situ* and coloured. This was one of the most beautiful bits of modelling in this country. There was only a small portion of it left.

Many slides were shown illustrating in great detail the drawing-room ceiling at Speak Hall, Lancs, where there were many panels between the beams, all different in design. Each panel was different in detail and type of flower. Several interesting examples were shown of ceilings in which the stem work was modelled direct into the ceiling, partly pressed with a die or stamp, and partly cast and stuck up so far as the flowers and lumps were concerned, including work from Kellie Castle, Fifehire. Attention was especially drawn to the resource of the builder or

architect in taking advantage of the opportunity given by the rooms formed in the roof space, and the quaint constructional developments afforded by this means. Slides were shown of the flat ceiling of Queen Victoria's bedroom at Holyrood Palace, Edinburgh. The ceiling of this room was formed centrally into a large square panel by a moulding bound round by a belt of leafage and fruit modelled and cast in individual members, and stuck up leaf by leaf and fruit by fruit in a continuous growth of decorative rhythm. Bounding the large central square panel at the cardinal points were four circles of leafage similarly modelled, dividing four V-shaped panels filled with straggling stem work, modelled *in situ*, and vine or oak-like leafage, cast separately and stuck up loosely in one rich filling.

Revival of Stucco-duro.

The lecturer then went on to describe and illustrate the revival of stucco-duro in modelled ceilings of the periods of Inigo Jones, Webb, and Wren by the Italian plasterers, who wore goggles to protect their eyes from the falling fragments of lime stucco which they used. Fine examples were shown from Coles Park, Ashburnham House, Westminster, Holyrood Palace, Belton House, Melton Constable, Acklam Hall, Brickwell House, Grantham House, Groombridge Place, and elsewhere, illustrating the beauty and technical value of stucco-duro as a material for working *in situ*. In all these examples it was explained how the quality of the material, which could be regulated in the setting to any degree of time by the introduction of various ingredients, enabled the modellers to give sharpness of edge, thinness of substance, and depth of undercutting and relief to any extent; how the flower heads stuck out from the bulk and were attached by isolated stalks steeped in the same "plaster"; how in some cases the stem work corkscrewed round and round the highly relieved lengths and garlands of modelling, and how the leaves and flowers could be modelled as thin in substance as the petals of a rose or a piece of drawing paper. The secret of the beauty of this work was due to the employment of a particular plaster material and process that had not been available in modern times, the composition and manipulation having been lost sight of for two centuries until now. The plaster used for this work was the material spoken of at length by Vitruvius in his writings on architecture, *viz.*, very carefully selected lime, which has been slaked for many years, mixed with finely sieved marble dust and various ingredients to regulate the setting as required according to the thickness of the plaster or the size of the work. The plaster, which was worked in the fingers or with the steel trowel, was very fine and smooth, intensely sensitive, and impressionable to the touch of the modeller. It has a fine reflective quality possessed by no other plaster, can be worked very thinly and delicately, and dries out very hard.

Twelve years ago, when the famous ceiling at Kilmainham Hospital, Dublin, was taken down and remade owing to its dangerous condition, the modelled detail had to be reproduced in compressed *papier maché*, because the art of making the old stucco-duro plaster, of which the original ceiling was composed, was lost, and the material was thought to be unobtainable. Detail thus wrought and built up in the fingers of the modeller could not be reproduced by casting in any material or by any mechanical process whatsoever. The art of stucco working in these islands died

* Extracts from a paper read before the Edinburgh Architectural Association.

just before the introduction of the composition by the Brothers Adam, and during the last eighty years this has been replaced, chiefly by the mechanical reproduction (in fibrous plaster cast from jelly moulds) of clay modelled decoration based largely on the lines and spirit of the stucco work (erroneously known as Georgian) done under Inigo Jones, Wren, and others.

Discovery of an Old Method.

This old stucco-duro material was now to be had, the secret so far being the lecturer's own; several large ceilings were now being worked in exactly the same Italian stucco-duro material and process as famous ceilings to which reference had been made. Another process was that of modelling the leaves, fruit, flowers, etc., individually, casting them separately in plaster of Paris or Keen's cement, and tucking them up into a prepared hollow ground work *in situ* on the ceiling. Even this would not give the same beauty of definition; but it was the next best thing and required the judgment and arrangement of an artist not always forthcoming in the purely mechanical training of the modern plasterer, although there were signs of considerable ability in this direction. A few examples of Wren's later work were shown in which the Dutch modellers re-introduced for a time the French type of work very indifferently; also the work of Hawksmoor, Archer, Talman, and others. The Brothers Adam took their inspiration from the Pompeian masterpieces and gave these islands some splendid examples of artistic plasterwork in a plaster composition in which they were financially interested. Then followed that degrading period of so-called pseudo-Classicism in which the London squares and streets, and also the provincial towns, revelled for a time, creating a prejudice that, with a large proportion of the general public (and even amongst some architects), had lasted to the present day, and had done so much to retard any real development of the plasterer's art.

The Trend of Modern Work.

Mr. Bankart then passed on to modern

materials and modern work, showing by illustrations that a considerable amount of work had been done by living journeymen plasterers who, by diligence and careful study, had picked up the threads of past traditional methods of working and applied that knowledge to modern materials and modern construction with considerable ability and success as artists as well as mechanics. This, he maintained, was at last a favourable sign and gave bright hope of the foundation of a new living school of decorative plastering. The fault was not the plasterers', but the natural misfortune of their dull training for generations back in being left to think that mechanical accuracy and perfection of surface was the zenith of plasterers' work.

Much good and interesting plasterwork was being done in different parts of the country, and there was every encouragement for the younger generation of plasterers to study and take up the once living art of their trade and to develop it in a manner suitable to and worthy of our modern methods of construction.

THE "PERFECT" SYSTEM OF HEATING.

When it is proposed to equip a building with a heating installation, the considerations that will most affect the choice of a system are simplicity of action, general efficiency, with the minimum amount of attention and economy of upkeep. A system of heating that complies with all these conditions is the "Perfect" system of Messrs. Benham and Sons, Ltd., 66, Wigmore Street, London, W. This system involves no trouble in management; the fuel having been supplied to the boiler, the apparatus may be safely left to distribute its heat evenly and at a uniform rate throughout the whole building. No complicated machinery being employed, skilled knowledge is rendered wholly unnecessary. An important feature of the "Perfect" system is the circulator placed on the return main of the apparatus alongside the boiler. This circulator,

which is patented, can be worked by an electric motor, hot air, or a petrol engine. The cost of working the motor is more than covered by the saving of fuel effected in its use. Therefore it is cheaper to heat a building with the circulator in action than with it shut off.

The circulating pipes used in the "Perfect" system are of remarkably small diameter, the consequent advantages being neatness of appearance, minimum wastage of heat in circulating mains, saving of fuel for heating up the apparatus, and decreased builders' work when the original installation is made. Another advantage is that the circulating pipes and connections can be run irrespective of levels. The circulations may be run in any direction desired—overhead, underneath, up and down—in fact, in any way that the peculiarities of a building may render necessary. The accompanying diagram illustrates the possibilities of the "Perfect" system in this respect.

The pipes may be concealed in skirtings, floors, ceiling spaces, or chases, or may be conveniently run in the open since there is nothing unsightly in their appearance. No excavation is necessary for the boiler-house, as the boiler can be fixed upon any floor.

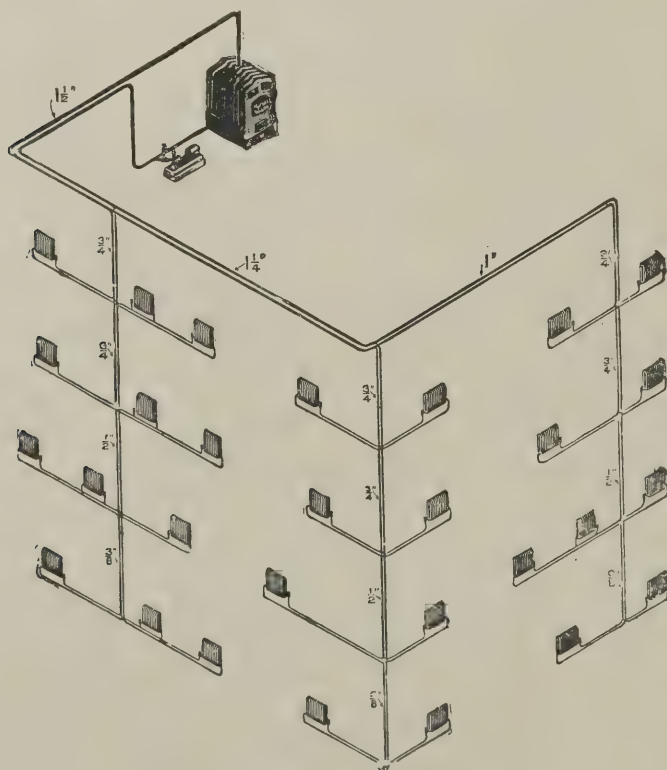
With the "Perfect" system a temperature of from 180 deg. to 190 deg. F. can be obtained on the radiators. The system can be fixed to existing installations which may have become unsatisfactory; these may thereby be made effective and efficient at a very low cost. The principal advantages of the "Perfect" system are that there are no intricate parts to get out of order and no maze of pipes in the boiler-house requiring the expert attention of an engineer. Another important consideration is that the fire may be banked up over-night or during the day without in any way interfering with the working of the installation.

In the "Perfect" system the temperature of the water in the boiler is immaterial; it may be allowed to drop down to 100 deg. F., or lower if desired. When the fires are banked at night the circulator should be shut off and the by-pass valve opened, the system then working as a gravity one. The whole apparatus required for working the system is confined within a small space in the boiler-house.

Messrs. Benham and Sons, Ltd., have installed a large number of "Perfect" systems throughout the country with highly satisfactory results. Arrangements would be made, if desired, for the inspection of an apparatus under actual working conditions.

AN EXTENSIVE BUILDING SCHEME.

One of the most extensive house-building schemes ever carried out in Scotland was completed last week at Port Glasgow. This is what is known locally as the reconstruction of the "Bay Area" of the town. The work, which was started three years ago, was initiated by the late Mr. W. T. Lithgow, principal partner in the firm of Messrs. Russell and Co., shipbuilders. He contributed £10,000 towards the cost, and also presented the ground to the Town Council. The total expenditure has been about £100,000. The buildings consist of forty-six large dwelling-house blocks, with accommodation for 400 families and forty-four shops. The houses have one, two, three, and four apartments, and they take the place of what was an area of the pronounced slum type.



THE "PERFECT" SYSTEM OF HEATING.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 12th, 1912.

Volume XXXV.

No. 908.



NEW LIBRARY, MILL HILL SCHOOL.
COLLCUTT AND HAMP, F. AND A.R.I.B.A., ARCHITECTS.



EXTENSIONS TO THE CITY SCHOOL OF ART, LIVERPOOL: THE MAIN ENTRANCE.
WILLINK AND THICKNESSE, FF.R.I.B.A., ARCHITECTS.

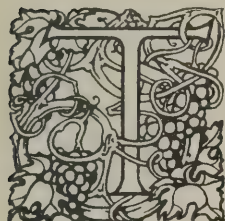
THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 12th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 908.

"The Newer Responsibilities of Architects."



THE above title given to the paper read by Mr. Woodward at the Institute meeting on June 3rd (as reported elsewhere in this issue) must have been suggested by the fact that it was in some respects intended as a continuation of the class of subjects previously treated in two or three papers by other members under the same heading; otherwise the title of the paper was the only illogical thing about it, for, except in regard to one point, it hardly dealt with new responsibilities so much as with old points which have been somewhat neglected, or on which rather confused ideas seem to prevail.

The one point mentioned in the paper in regard to which there are some newer responsibilities for architects is that of modern hurry in building, and on that point Mr. Woodward spoke very forcibly and well, though he touched only one side of the subject. The results, he said, of the modern effort to hurry up buildings (for commercial reasons) are that architect and builder are made responsible for defects which would not arise if a proper amount of time were allowed, first, for the studious preparation of the drawings and specifications; and, secondly, for an adequate time to build properly, allowing a sufficient time between the trades for the work to approach some sort of dryness. All this is perfectly true; and it is, indirectly, the public, the clients, who are to blame for a good deal of bad building, because they will have structures built in a shorter time than it is possible to do them well. The rage for hurry in the present day is responsible for many evils. We heard the remark from a naval officer that it was really the public who were responsible for the Titanic disaster; they will be carried in the shortest possible time, and they will patronise the line which makes a trip in a few hours less time than another, without any consideration of safety. It is somewhat the same with building; the public insist on a building being finished in a shorter time than is fairly possible, and then the architect or contractor, or both, are blamed if the building shows structural or practical defects.

That is bad enough, and no doubt it often results in great unfairness to the architect, and may be characterised as a newer responsibility. But there is the still more important point, the effect which this hurry-scurry system has not merely upon the architect, but upon architecture. No great architecture was ever done in a hurry. Architectural design, to be worth the name, requires careful study and consideration, both of general composition and of every detail. What time is there for that now, in forty-nine cases out of fifty? The result is that architecture is produced on the popular pattern of the moment. At present the popular pattern consists in leaving unmeaning blocks of masonry, what may be called panels in relief, all over a building, with vertical festoons depending from them like sausages. All over London one finds that kind of detail in new buildings.

There is no meaning and no thought in it; but it is the fashion of the moment, and there are plenty of clever draughtsmen ready to knock off an elevation on this pattern in double-quick time. But that is not architectural design.

To the personal matters in connection with the case which Mr. Woodward took as the text for his paper we have no intention of referring here; but the judgment of the Official Referee raised general considerations which are of some importance. In the first place, he seems to have decided that Clause 3 of the Institute Form of Agreement, which provides as to the course to be followed if another architect is appointed during the progress of the work, is legally inoperative, as the architect, being the one agreed upon in the contract between employer and contractor, cannot be dismissed by one of the parties to the contract without the consent of the other (the contractor). In common sense, as apart from law, such a position is, of course, ridiculous. The idea that a client cannot dismiss an architect who is his professional adviser, and with whom he is dissatisfied, without the permission of the contractor who is carrying out the building, and who is really his employee, seems too preposterous for anyone but a lawyer to entertain; but if that is the legal effect of Clause 3 of the Institute Form of Agreement, it ought to be altered in its wording without delay, so as to do away with such an anomaly.

The judgment in the case referred to included observations which seem to amount to a caution on the subject of the nature of the authority delegated to a clerk of works. Most architects and most clerks of works probably thoroughly understand that the clerk of works' duty is to see that the architect's orders are carried out, and the conditions of contract as to materials and workmanship insisted on. The Official Referee pointed out that a clerk of works could have no authority to relieve the contractor from any of the obligations on these points provided under Clause 7 of the Institute Schedule of Conditions of Contract. That, of course, is perfectly plain; he could only report to the architect and ask for orders, and those orders should be in writing, both to the clerk of works and the contractor. It would be no defence for a contractor who had used inferior materials to plead that he had the permission of the clerk of works, because the latter has in himself no power to give such permission. But if things are to be put on a perfectly legal basis, there might come in the question, Has the architect any legal right either to consent to the use of inferior materials, or to order extras, without consulting his client, who is one of the parties to the contract? He could only legally have that power if he had a written agreement, as between himself and his client, that he was to have power to alter materials or to order extras, on his own judgment, if he considered it in the best interests of his client to do so. In the case of such a written agreement the client would be bound to agree to the altered materials, or to pay the bill for the extras.

Probably there are not many clients who would be content to give such a free hand to their architects, deliberately and in writing; and perhaps there are not many architects to whom it would be safe to give it, not

from any question of their probity, but of their judgment. But there is no doubt that in many cases clients do put their architects in this position, not by an agreement in writing, but by leaving everything in their hands and having perfect confidence in them—until the bill of extras comes in, and then they think themselves very ill-used. This *casus belli* between client and architect has cropped up over and over again. In some cases the architect has been to blame in allowing too free a hand in extras, perhaps partly for his own satisfaction in his building, but in a majority of cases he has really been acting for the good of his client. The grievance of the client always is that "he did not know" of any of these extras; he was prepared to pay the contract price cheerfully, but he grumbles at finding a number of little (or sometimes large) extra charges for things he knew nothing of. And the complaint is, from his point of view, reasonable. The moral (for the architect) is a two-fold one. First, never allow extras without your order in writing; nothing is more likely to make trouble than concessions or orders made on the spur of the moment in a verbal form. This may seem too self-evident to need remark, but cases have occurred (*causes célèbres*, some of them) in which extensive verbal permissions have been given by the architect, and have brought disastrous consequences afterwards. Secondly, it is necessary either to have a written agreement with the client that he leaves alterations to the architect's judgment, or he should be informed in writing, and in a copied letter, every time an extra is ordered. An observance of these rules would have prevented many a legal action between client and architect. And these are not "newer responsibilities," or ought not to be.

The R.I.B.A. Elections.

BY the courtesy of the R.I.B.A., we give the results of the elections of officers and council for the session 1912-13, which were announced at last Monday's meeting as follows:—*President*: Reginald Blomfield. *Vice-Presidents*: A. W. S. Cross, E. Guy Dawber, George Hubbard, Ernest Newton. *Hon. Secretary*: Henry T. Hare. *Representatives of Allied Societies*: C. E. Bateman (Birmingham), John Brooke (Manchester), Arthur Clyne (Aberdeen), J. A. Gotch (Northamptonshire), G. Hastwell Grayson (Liverpool), William Milburn (Northern A.A.), A. N. Paterson (Glasgow), E. R. E. Sutton (Nottingham), A. L. Campbell (Edinburgh). *Members of Council*: A. W. Brewill, Max Clarke, T. E. Cooper, William Dunn, F. R. Farrow, William Flockhart, W. A. Forsyth, J. S. Gibson, H. V. Lanchester, C. S. Peach, Sydney Perks, S. P. Pick, C. H. B. Quennell, E. A. Rickards, W. J. Tapper, W. H. White, E. W. Wimperis, William Woodward. *Associate Members of Council*: K. Gammell, S. K. Greenslade, Edwin Gunn, A. E. Munby, Septimus Warwick, A. Needham Wilson. *Representative of the Architectural Association*: Gerald C. Horsley. *Auditors*: John Hudson; W. H. Burt. *Art Standing Committee (Fellows)*: E. Guy Dawber, William Flockhart, Henry T. Hare, Gerald C. Horsley, T. G. Lucas, Ernest Newton, E. A. Rickards, J. W. Simpson, H. H. Statham, W. J. Tapper; (*Associates*): O. Maxwell Ayrton, Matthew J. Dawson, Sidney K. Greenslade, J. J. Joass, Septimus Warwick, A. Needham Wilson. *Literature Standing Committee (Fellows)*: J. Alfred Gotch, W. Curtis Green, D. Barclay Niven, G. H. Fellowes Prynne, F. M. Simpson, R. Phené Spiers, C. S. Spooner, C. Harrison Townsend, E. P. Warren, Paul Waterhouse; (*Associates*): Walter Millard, Herbert Passmore, C. Wontner Smith, A. J. Stratton, W. H. Ward, H. W. Wills. *Practice Standing Committee (Fellows)*: Walter Cave, Max Clarke, A. W. S. Cross, George Hubbard, J. B. Mitchell-Withers, C. Stanley Peach, Sydney Perks, H. D. Searles-Wood, A. Saxon Snell, W. Henry White, William Woodward; (*Associates*): Horace W. Cubitt, K. Gammell, Edward Greenop, J. Nixon Horsfield, C. E. Hutchinson, Herbert Shepherd. *Science Standing Committee (Fellows)*: H. Percy Adams, E. R. Barrow, W. E.

V. Crompton, Bernard J. Dicksee, William Dunn, F. R. Farrow, Ernest Flint, Horace Gilbert, George Hornblower, R. Elsey Smith; (*Associates*): R. J. Angel, G. Leonard Elkington, Charles J. Marshall, Alan E. Munby, D. L. Solomon, E. W. M. Wonnacott.

In Committee of Supply.

THE discussions in the House of Commons under the head "Committee of Supply" are often interesting, and sometimes amusing. They afford an opportunity for the discussion of various points connected with the architectural treatment of London, and they also give us glimpses into the minds of our representative legislators in regard to artistic subjects; glimpses, however, which do not always tend, in Wordsworth's phrase, to "make us less forlorn." The general tendency is to object to all expenditure on architecture or other forms of art and to find out that everything that has been done or proposed is wrong.

The first subject that came up in "Supply" on June 4th was that of "Diplomatic and Consular buildings," in regard to which the Government seem to have been very rightly moved by the idea that such buildings abroad should be kept up to a standard suitable to the dignity of the nation. A sum of £6,000 is to be spent on providing a reception room for the Agency house at Cairo, on the ground that "the house which the British Agent occupied must be suitable to the dignity of his position in Egypt." Could anything be more reasonable? Then there is a sum of £20,000 for rebuilding the Embassy house at Therapia, which, it appears, had been burned down. One can hardly suppose that an Embassy house worthy of the nation could be built for less; but this also was the subject of attack!

There turned up the rather more difficult question of the Edward VII. Memorial in the Green Park, on which there is some excuse for differences of opinion. That the Memorial turns its back to the main thoroughfare is certainly unfortunate, but it was of paramount suitability that it should face towards the Victoria Memorial, and a memorial statue cannot be made to act the part of Mr. Facing-Both-Ways in the "Pilgrim's Progress." That the monument as a whole will make a very large intrusion on the green space of the park—larger than was really necessary—is true; but one of the speakers who thought so nevertheless said that he would regard the controversy as closed. It will, at all events, be a better memorial than the Victoria one, in a general sense, because the sculptor has not in this case been permitted to be his own architect, and a very gifted architect has been commissioned to carry out the general design. But what one must protest against is the demand made by two members, Captain Murray and Mr. Whitehouse, that the Office of Works should give an undertaking not to put any more sculpture in the public parks! A more ridiculous prejudice could not be imagined. One of the means of beautifying and giving interest to public gardens and parks is the erection of sculpture in them, and they afford the most favourable conditions for placing open-air sculpture with effect; sculpture goes exceedingly well with foliage and it adds to the interest of a garden. Look at Versailles, and the Tuileries Gardens, and the Luxembourg Gardens, all full of fine sculpture. Are they spoiled for enjoyment by it?

Then the members entered on another dispute in regard to the proposed lighting of the House with electric light. On the question of which kind of light, that or gas, is the most agreeable to work under, there will of course be differences of opinion; but we should advise the members who oppose the introduction of electric light to reconsider their opinions. They will probably find the electric light more satisfactory on the whole, as a light, and it has the great advantage of not contributing impurity to the air of the House. There was also, of course, the member (there is always one) who complained of the ventilation of the House; but Lord Balcarras was probably correct in saying that the ventilation of the House of Commons is better than that of any other place

of public assembly; it is certain that quite exceptional pains have been taken to make it so.

On June 5th Committee of Supply was mainly occupied with the very large question of housing in rural districts, various members challenging the President of the Local Government Board to explain to them why it was that so little had been done to put the Housing and Town Planning Act into operation. The evidence given as to the present bad state of rural cottages, and the absolute dearth of accommodation of any kind in many districts, was as decisive and unanswerable as ever on that subject, and no effectual remedy has been proposed. Mr. Burns said, however, in reply, that the amount of loans sanctioned to local authorities for housing improvements did not by any means represent all that had been done, as what had been done by private enterprise was seventy or eighty times more than what local authorities had attempted. Nevertheless, the revelations made in the course of the debate, by members living in and representing populous country districts, leave a most serious impression of the dreadful lack of decent house accommodation in many parts of rural England. It almost seems that if the rebuilding of country cottages and the supply of new ones (for quantity seems as deficient as quality) cannot be made the interest of any capitalists, it may have to be taken up by the State, as a remedy for an evil which may indirectly injure the whole community.

By-laws in Rural Districts.

SOME foolish business was done in one of the Standing Committees of the House of Commons last week, when a successful effort was made to relax the conditions as to building by-laws in the Housing of the Working Classes Bill. The Government had already proposed a certain degree of relaxation, in the shape of an amendment which was to exempt from the operation of the by-laws schemes promoted by a local authority under certain prescribed conditions where the plans were approved by the Local Government Board. But Sir R. Baker moved a further amendment with the object of extending the exemption to any schemes promoted by private persons where at least six houses were to be erected. With regard to this we would say that the object of building by-laws is to secure that houses, including cottage property, should be properly and soundly constructed; yet, according to the amendment, a private person who would have to observe the by-laws if he built one cottage might be at liberty to build half-a-dozen just as he pleased. As Mr. John Burns pointed out, a very probable result would be that a man would come forward with a scheme for building six houses in order to obtain exemption, and then would only build one or two. Mr. Burns also proceeded to show that building by-laws were not what prevented cottage building, as it was a curious fact that in 189 rural districts where there were no by-laws there was less building than where there were by-laws; and he added, with plain-spoken truth, that they had no right, in the name of helping rural housing, to run the risk of covering the countryside with cheap and nasty buildings by wholesale exemptions from the by-laws. He is absolutely right, and his arguments ought to have been conclusive; the mover of the amendment, who evidently was afraid of hearing any more, moved the closure of the debate, and this was stated to be carried by 16 to 14, although the chairman admitted afterwards that under standing orders the closure could only be carried if at least 20 members voted for it; and the closure being thus illegally voted, and the voice of common-sense stopped, the absurd amendment was carried by the same majority of 16 to 14. It may possibly come to nothing, for Mr. Thorne, the Vice-President of the Municipal Corporations Association, declared that no local authority in the country, when they came to know the bearings of the Committee's decision, would tolerate it for a moment, and that the probable result would be that it would wreck the Bill. It is a proceeding any-

thing but creditable to the Committee which lent themselves to it. All this nonsense of encouraging people to build on the promise that if they will only build plentifully they shall build as badly and cheaply as they like, is the natural outcome of the cry that has been got up against rural by-laws by the editors of certain weekly papers. Building by-laws, though it is no doubt difficult to frame them so as to be equally applicable to all circumstances, are absolutely necessary, in order to ensure against flimsy building, which in the long run is a way of doing more harm than good to the rural districts.

Competition Designs for Mural Painting.

IN the restored Crosby Hall on the Chelsea Embankment (a place rather inconveniently inaccessible) there is a collection of designs for mural paintings to be executed in schools and other establishments, for which prizes have been offered by a committee interested in promoting this class of decoration. With every sympathy for the motives which led to this undertaking, we cannot think that the results are very promising. Probably experienced artists would hardly compete for these prizes, and the designs exhibited are for the most part crude in idea and in many cases not at all well drawn. This fact is the more emphasised by contrast with a good many designs by able decorative artists, the late Albert Moore and others, which are also included in the exhibition. Decorative mural painting, with its severe restriction in regard to style, above all things demands mastery in drawing, and that is just the quality which is not present in most of the designs submitted in competition. Among the best are some on the subject of the Nativity, intended for a church; the best is perhaps a very mediæval one in style, with the odd signature, "O tempora Mores," apparently an imperfect recollection of the celebrated sentence of Cicero, "O tempora! O mores!" A design by "Huldre" illustrating "Picking Strawberries," and intended for Messrs. Crosse and Blackwell's jam factory, has merit, especially in the detail figure of the boy. But there are very few of the designs which we should think really worth executing in permanent form; and in some cases the suitability of the subject may be questioned. There are some clever sketches, for instance, intended also for Messrs. Crosse and Blackwell's factory, representing girls engaged in operations of the factory; but where is the sense of painting on the walls a conventionalised representation of the persons employed and the processes actually going on in the building? A decorative painting should rather take one away from the mere prose fact of the operations than provide a conventionalised repetition of them. There is rather a sense of unreality in the whole show; the intention is very good, but the result is disappointing. The best things there were among the slighter attempts; a wall panel, for instance, of an Australian landscape, by Miss Merfield, and three or four patterns for dado borders, under various signatures. But we fear the more ambitious subjects are rather failures.

"The Amalgamated Building Workers' Union."

A SPECIAL committee appointed by the Trade Union Congress Parliamentary Committee to inquire into the advisability of amalgamating all the unions in the building industry into one solid body has presented its report, which is entirely favourable to the project of organisation "by industry instead of craft." More industry and less craft is precisely "What the Building Trade Wants," but it is hardly likely to get it from the new movement. More industry than harmony can be pretty confidently predicted for the special conference which is to be held in London on June 21st to arrange "the final details" (finely optimistic phrase!) of the amalgamation. Twenty unions, we read, are definitely committed to the scheme; and it is proposed that there shall be a uniform scale of benefits and contributions—from which it would appear that there are

to be no invidious distinctions: the labourer with his sixpence or sevenpence an hour is not to be austere debarred from paying as much as the skilled worker at tenpence or a shilling. It looks like a typical democratic proposition; but will not the labourer shrink sensitively from the undeserved honour of equal contributions from unequal wages? Or is it in contemplation to secure all-round equality and fraternity by levelling up wages to a uniform figure? A strong argument (trade-union brand) for this course would be that it would effect enormous economies in simplifying the employing builder's accounts. In some respects the amalgamation would afford welcome relief to the federated employers, who are themselves rather eclectically constituted. It ought to simplify procedure in cases of dispute. United Labour, it may be supposed, would no longer speak to the employers' federation spasmodically, and in various and discordant voices. Among brethren dwelling together in unity, the plasterers, for instance, could not consistently resume their old-time amusement of straight-way upsetting an amicable settlement between the employers and the bricklayers; and the interesting if somewhat wearisomely reiterated demarcation squabbles of smith versus plumber, or of slater versus tiler, need no longer vex the soul of the inoffensive employer, since surely these little differences would, under the new régime, be quietly and comfortably settled within the greatly amplified circumference of the happy-family circle. It is to be feared, however, that the basic idea of amalgamation is not to relieve the pressure on employers, but to add to it all the dynamic force of united and simultaneous effort. It is not peace, but war. Yet amalgamation and unanimity are so far separate and independent entities that the latter is not an essential sequence to the former; and on scrutinising the list of the twenty unions which are attempting coalition, it is difficult to believe that so many diverse, not to say antagonistic, interests can ever be reconciled and tempered to harmonious agreement and united action. Consequently, although the proposed amalgamation may be arranged—which, even yet, is by no means a foregone conclusion—there will remain the possibility that the internal jealousies and antipathies from which the separate unions are not free will be intensified enormously by the clash of interests that seems inevitable. It is the clash of interests that has suggested amalgamation; and the attempt to bring them closer together may easily mean more clash.

The Ownership of Plans.

POPULAR misconceptions of the law, like other traditions, good and bad, die very hard. There are still those who believe that plans always remain the property of the architect who made them. Thus, a correspondent of the "Hospital," writing to that periodical on an architectural subject, concludes his letter with this confident pronouncement: "Your article is somewhat misleading on the subject of the ownership of drawings. They are usually reputed to be the property of the architect, and not of the employer, and this view has, I think, been upheld by a test case." Unfortunately there can be no doubt that the drawings "are usually reputed to be the property of the architect." That, however, is a popular misconception, and its hardy survival justifies a further attempt to explain the position. In the leading case in which the matter was determined, the decision was the reverse of that alleged by the correspondent of the "Hospital." The case in point was that of *Gibbon v. Pease*, which was heard by Collins, M.R., Mathew, L.J., and Cozens-Hardy, L.J., constituting the Court of Appeal of the Supreme Court of Judicature, on March 24, 1905, when, following the precedent set in *Ebdy v. McGowan*, the Court decided that "a building owner who employs an architect to carry out work upon the ordinary terms of paying him 5 per cent. on the contract price, is entitled to the plans and specifications prepared

by the architect for the purpose of carrying out the work, after the work is completed and the remuneration paid. An alleged custom to the contrary would be unreasonable and bad." The plaintiff was the owner of certain houses in Bayswater, which he desired to convert into flats. Defendant having prepared the necessary drawings and superintended the execution of the work, refused to hand over the plans and specifications upon the demand of the plaintiff, who thereupon brought an action for their recovery. Ridley, J., following the judgment in *Ebdy v. McGowan*, refused to admit evidence of any custom of the profession that the drawings remained the property of the architect, and he held that the building owner was entitled to recover them. Against this judgment the architect unsuccessfully appealed, the Appeal judges being unanimously agreed that, in the absence of any stipulation to the contrary, the drawings became the property of the building owner, and they were all of opinion that any custom of the profession that vested in the architect the ownership of the drawings would be unreasonable. Counsel for the architect contended that "the essence of the contract between the client and the architect is only that certain work is to be done and carried out for the client under the superintendence of the architect, and not that anything shall be made and given to the client," but this contention has never succeeded, although to a layman it looks like equity, the opposite view being based upon analogies that are not conspicuously apt—such as that "a solicitor upon being paid his bill was bound to deliver up to his client drafts and copies of deeds made by the solicitor," and that there is no "difference between this case and the case of an artist who is employed to paint a picture or design a coat of arms, where the property passes to the employer." It would have seemed to us that the legal documents and the paintings were objective things *per se*, whereas the architectural drawings were not objective, but merely means to an end. It is not for us, however, to lay down the law, and the fact remains that, in the absence of express provision to the contrary, the drawings become the property of the building owner. The architect who has any particular reason or fancy for retaining his drawings can attain that object by express stipulation agreed to before he undertakes the work.

A Factor in the Shop-front Problem.

AT a time when considerable attention, both professional and public, is being given to the shop-front problem, it is well to point out a certain aspect of it which is in danger of being overlooked. On one side we have the advocates of the purely architectural effect of shop-front design and on the other the shopkeepers, who appear to be moved by business motives only. The point to which we would draw attention is that shopkeepers occupying premises in an important thoroughfare like Regent Street should recognise (or should be made to recognise) that they have a civic duty to perform in addition to acts of business; in other words, Regent Street being a civic asset, they should be compelled to build their new shop-fronts in such a way that the architectural effect of the thoroughfare is not destroyed. And if they insist on plate-glass down to within an inch of the pavement and the whole shop-front being enclosed by narrow beads that fail to give the necessary effect of support, then every hope of a successful result will be destroyed. Of course, we know the shopkeepers will say at once that all this is very excellent, no doubt, but that, as a fact, they find themselves in the midst of a keen competition, and that they cannot afford to sacrifice an inch of space just on account of æsthetics. But we have yet to be convinced that this demand for every inch being absorbed in the plate-glass area really has any good reason to warrant it. The problem is obviously a very difficult one, but it will only be settled on the lines of fair architectural effect in conjunction with a recognition of business needs. To attempt a solution the other way round is to court failure.

THE LATE MR. D. H. BURNHAM.

MR. DANIEL HUDSON BURNHAM, the eminent American architect, whose death was announced on June 2nd, had been long in the forefront of his profession in the United States. In that country there would be no need to apologise for his numerous giant structures, where the Flat-iron Building in New York; the First National Bank, Chicago; the People's Gas Company Building, Chicago, and the Commercial Bank Building in the same city, and his other successful solutions of the height problem, do but enhance a reputation that, for British and Continental architects, rests more securely on his splendid essays in town planning, and on his dominating influence over "one of the greatest architectural achievements of modern times"—greater, probably in its consequences than in its actual achievements—the Columbian Exposition of 1893, which was better known as the "Chicago World's Fair," and had an enormous influence on subsequent architecture in the United States.

Daniel Hudson Burnham was born at Henderson, Jefferson County, New York, on September 4th, 1846. He was therefore, at his death, in his sixty-sixth year. He began to study architecture in Massachusetts in 1864, and, returning to Chicago in 1867, he entered the office of Messrs. Loring and Jenney. After the great fire his share of the rapid rebuilding of the city was performed in association with the firm of Messrs. Coster, Drake, and Wright, by whom, in 1871, he was engaged as assistant. The firm of Burnham and Root was established in 1873, when Mr. Burnham entered into partnership with Mr. John Wellborn Root. This firm soon became distinguished by a greater regard for fine results than was then common, and, in particular, their Monadnock building, though a plain commercial structure, absolutely destitute of mere ornament, won the admiration of public and profession alike by its good proportions and excellent lines, and was perhaps the first positive evidence of Classic taste in the design of office buildings in America.

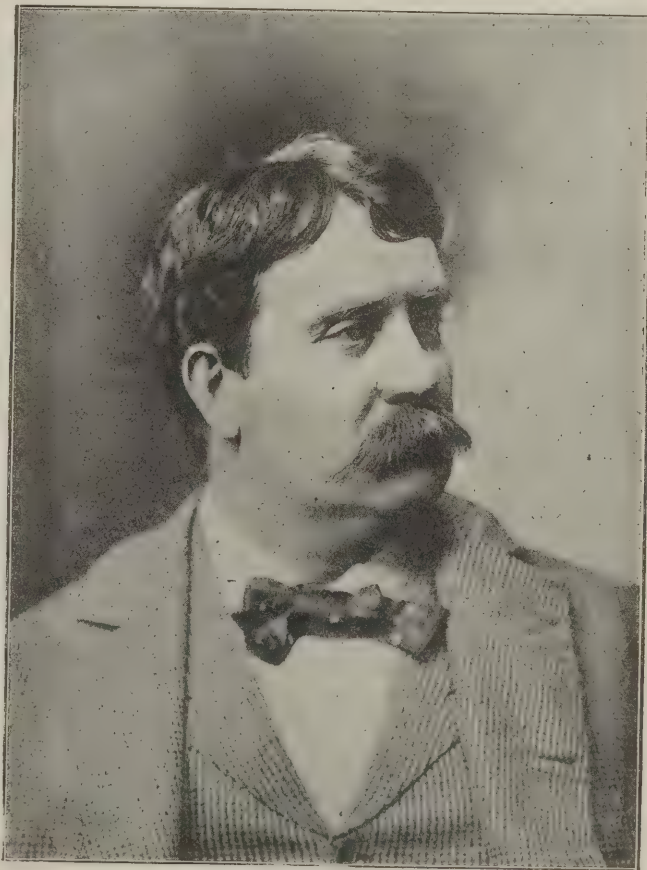
In September, 1890, Messrs. Burnham and Root were appointed constructing architects of the Columbian Exposition, and a month later Mr. Burnham was made Chief of Construction. In the following January Mr. Root died, and Mr. Burnham was appointed Director of Works. In that capacity he arranged for the control of the scheme by a Board of Architects, and for the assignment of the different buildings to different architects. The Board included men whose names thenceforward were to stand pre-eminent in American architecture—Richard Morris Hunt, Charles Follen McKim with his partners Mead and White, Peabody and Sterns, Denkmarr Adler, Louis Sullivan, George B. Post, Henry van Brunt, W. L. B. Jenney, and Charles Bowler Atwood, who became chief assistant to Mr. Burnham, who afterwards took him into partnership; while Mr. Ernest Graham was made Assistant Director of Works, and was also taken into partnership. Mr. Burnham obviously had a keen eye for character and ability, and he has been described by a United States Senator as "a great artist, a great engineer, a great organiser, and a great diplomat." This extraordinary combination of qualities having been fully manifested in the striking success, architecturally, of the Columbian Exposition, the importance of Mr. Burnham's labours was recognised in a great banquet, which was given in his honour in New York; in the conferring upon him of the honorary degree of Ph.D. by Harvard University; and in his election, in the following year, as president of the American Institute of Architects, to which position he was re-elected in 1895. At the end of this second term he was elected a director of the Institute for three years.

Mr. Burnham's energies were thereafter largely absorbed in the design of commercial buildings, of which a long list was given, with illustrations of several of them, in our issue of October 6th, 1909. His feeling for architecture, however, was more congenially expressed in his

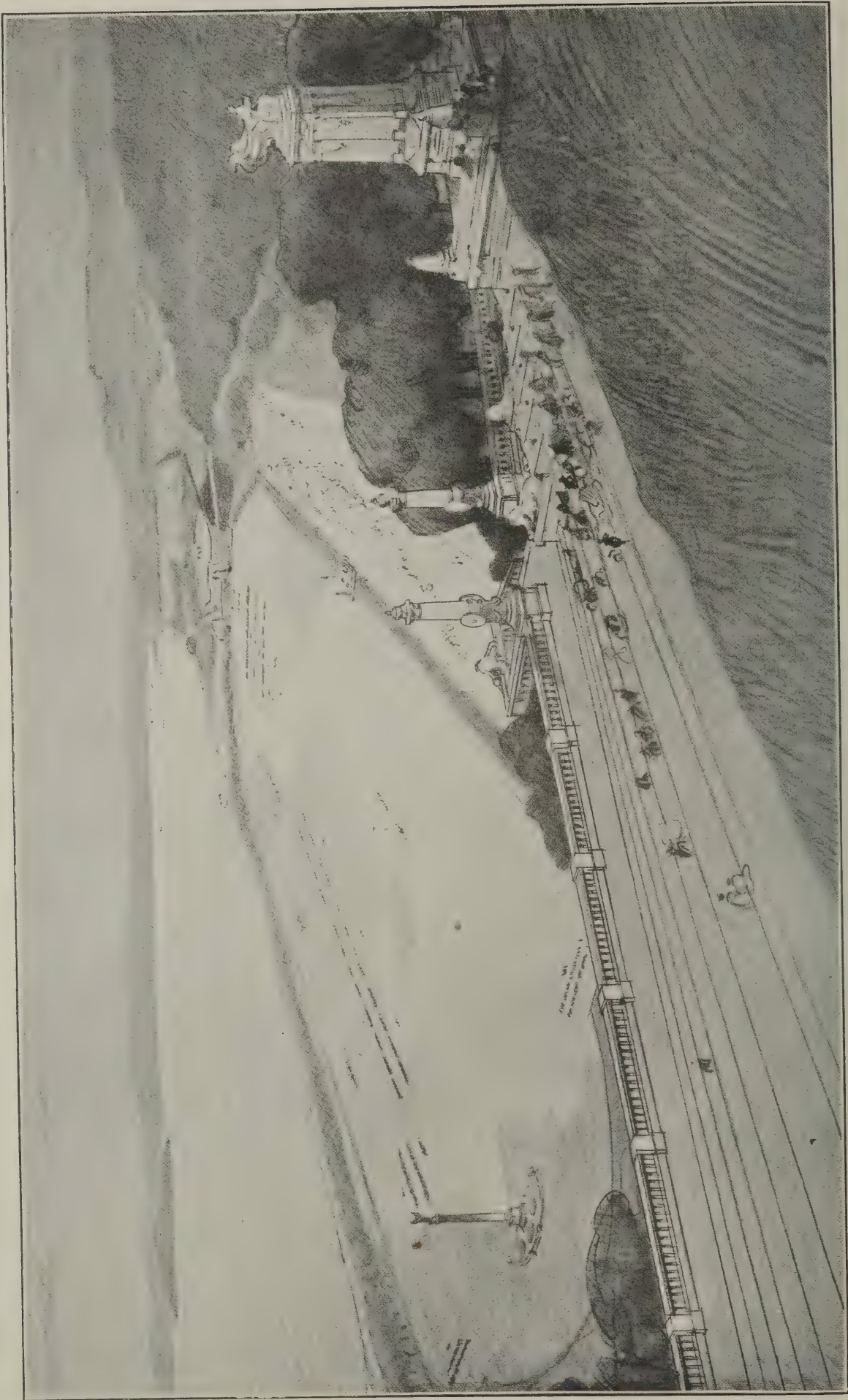
fine design for the Field Columbian Museum at Chicago, which ranks among the very best of American architectural productions. An equally meritorious work is the Union Station at Washington, D.C., illustrated in our issue for March 20th last.

In 1901 the United States Senate ordered plans for the development and improvement of the entire park system of the District of Columbia, when, on the advice of the American Institute of Architects, Mr. Burnham and Mr. F. L. Olmstead, jun., were appointed expert advisers (with power to add to their number) to the committee entrusted with the scheme, and subsequently Mr. C. F. McKim and Mr. Augustus St. Gaudens were co-opted. The splendid work Mr. Burnham did on this committee of experts, of which he was chairman, is now a matter of history, and has been already recorded in the pages of this journal (October 6th, 1909); so also were his re-planning of Manila and of Baguio in the Philippine Islands; his brilliant monumental study (1904) for the re-planning of San Francisco, in which he was assisted by Mr. Edward H. Bennett; and his great scheme for the lay-out of Chicago, a gigantic work for which, while it doubtless embodied the ideas of many minds, he was chiefly responsible. This last great conception—embodied in a volume of drawings published in 1909—would alone secure his reputation as an imaginative as well as a constructive architect of the highest eminence.

As a man, Daniel Hudson Burnham was esteemed for his self-sacrificing public spirit—his services in the great schemes upon which his assistance was sought were often purely honorary—for his invariably generous recognition of the help he received from other hands, even when such assistance was purely subordinate, and for his "cold head and warm heart, which never mixed, but were always in touch with each other." One who worked with him on the Columbian Exposition has said: "In meeting him I always felt a thin sheet of ice was between us, but a generous man on the other side." It was this cold-drawn intellectuality, beneath which there was so obviously a just mind and a generous heart, that made him a trusted leader of men, and energised and made prolific the remarkable talent that placed him at the head of his profession in America.

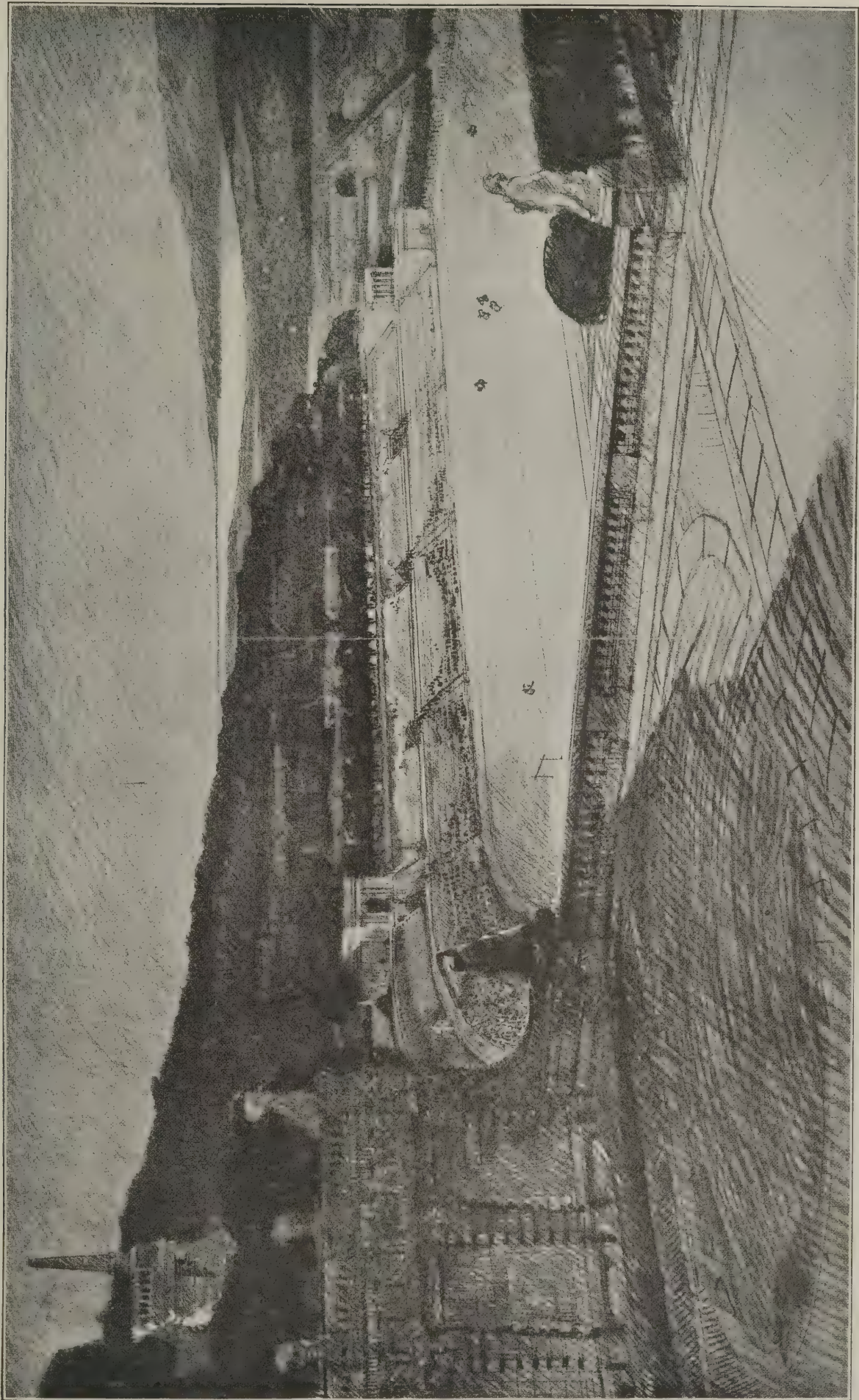


THE LATE MR. D. H. BURNHAM.



Mr. Burnham's scheme included an immense drill ground situated at the foot of Telegraph Hill on the north-east side of San Francisco. It was proposed to leave the hill intact as to mass, but to crown it with a park and a monument symbolical of some phase of the city's growth. Magnificent terraces around the heights, such as shown in the foreground of the above illustration, were prominent features of the scheme.

THE LATE MR. D. H. BURNHAM'S SCHEME FOR THE LAY-OUT OF SAN FRANCISCO: THE DRILL GROUND.



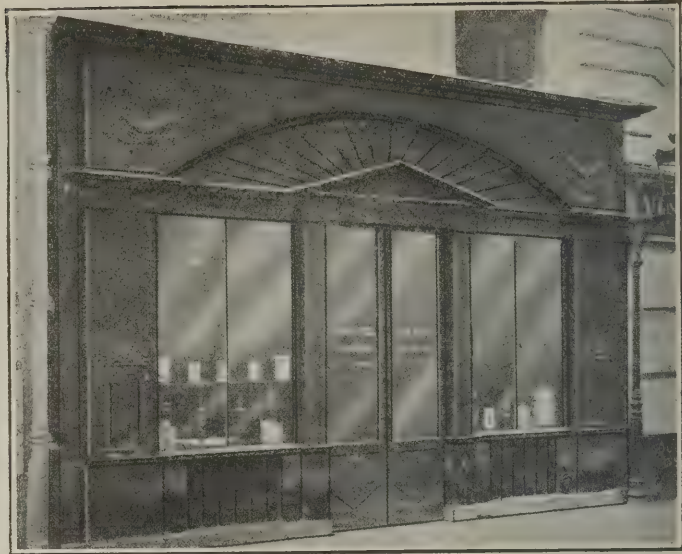
The above illustration shows the vast amphitheatre, situated in a natural hollow 800 ft. above sea-level, which formed part of Mr. Burnham's scheme. This amphitheatre was to be used for inter-collegiate football games, Olympic contests, horse shows, and polo matches. Mr. Burnham would appear to have been inspired by the Stadium in the Delphian hills, overlooking the Gulf of Corinth, or the Theatre of Dionysius, at the foot of the Acropolis, Athens.

THE LATE MR. D. H. BURNHAM'S SCHEME FOR THE LAY-OUT OF SAN FRANCISCO : THE AMPHITHEATRE.

PARIS SHOP-FRONTS, OLD AND NEW.

THE treatment of shop-fronts is a matter about which more or less heated controversy seems to be perpetual, the purely architectural view of the subject being always more or less sharply divided from that of the shop-keeper. This unfortunate divergency has recently become acute, even to the intrusion of personalities which, to say the least of them, are untoward as merely complicating a problem that clamours for solution through some sort of mutual agreement. "Temper," in this instance as in so many others, "defies the matter" as effectually as did the Shakespearean clown's "tricksy word," and should therefore be rigorously ruled out as being foreign to the issue.

"Foreign to the issue" in another and not an adversative sense is the practice abroad with regard to shop-front design. What is being done by our French neighbours, for example, should, and undoubtedly does, prove really helpful towards a rational solution of the problem in our own towns. London, especially, has already profited greatly by French example in this as in other architectural matters; and the accompanying illustrations



OLD PHARMACY, RUE DE GRAMMONT.



AN OLD BUTCHER'S SHOP, RUE DE VARENNES.

of some old and new shop-fronts in Paris will no doubt be welcomed as a substantial contribution towards the solution of a vexed question that seems ripe for settlement.

Shops in some form are coeval with commerce or sale and barter. The man who had goods for sale would at once require some sort of stall or stance on which to display them. Afterwards he would require some means of protecting them from the weather. On these simple lines the shop must have been developed. At first it must have been easily portable, as it is to this day in fairs and periodical markets. The "establishment"—does not the very name seem to suggest an advance on itinerant trading?—was obviously a later growth of civilisation.

Numerous examples of shops are found in Pompeii. The counters, generally of stone, project into the public way, and the open-air shop was closed when necessary by means of boards sliding in grooves.

Glazed fronts are, of course, of comparatively recent origin. Up to the end of the fourteenth century, the shop-front consisted of a couple of shutters closing on each other horizontally. The upper shutter, hooked to the lintel, could be swung out to form a sort of pent-roof to shelter the goods that were displayed on the lower portion, which was propped up horizontally from the ground to form a kind of counter, the shop being closed by drawing the one leaf down and the other up so that the pair met, and security being obtained by means of

iron bars, so that "shutting shop" was a very simple operation.

A long period elapsed before shops proper—that is to say, those so constructed that customers could get inside them—were evolved. Shops of this kind were hardly available before the period of the Renaissance and it was a long time before they began to acquire any distinctive character relative to the uses to which they were put. A common design, and characterless attempts at decoration, served for all trades.

Even at the present day the architect, to whom shop-front design is, in Paris as elsewhere, too rarely confided, finds himself at a considerable disadvantage owing to the fact that the particular business of the shop was not predetermined when the building to which it is attached was erected. The skeleton which is left for him to clothe—the stone pillars or iron columns to which he must accommodate his design—are at once prescriptive and prohibitive and must often sadly hamper his attempts to produce appropriate design and decoration. He has to make the best of things as he finds them. If, as sometimes happens, he is a man of strong individual



OLD PHARMACY, RUE DU FAUBOURG, ST. HONORÉ.



SHIPPING OFFICES, RUE SCRIBE, PARIS. CH. BREFFENDILLE, ARCHITECT.

temperament, he may nevertheless succeed in producing a design which, while extremely interesting in itself, is in dire conflict with the building which it fronts and with all the other shops in the street!

The street by-laws for Paris which came into force in 1902 give great freedom with regard to projections. Varying according to the street widths, the general projection of the base of a shop-front on to the public way may be from twenty to thirty centimètres. The cornice above the window may jut out to fifty to eighty centimètres, signs to two mètres, and canopies three mètres.

With regard to signs and canopies, a French writer complains that in spite of an æsthetic demand for the more general adoption of the beautiful wrought-iron work of which former centuries have left us so many excellent examples, there seems but little disposition in modern Paris to follow such models in framing signs or supporting canopies. Yet they would add much variety and charm. The same writer, in supporting his advocacy of ironwork, makes a point that may be commended to the thoughtful attention of the uncompromising all-glass advocates. The object to be attained in shop-front design, he reminds us, is not only to attract the customer, but to impress his or her memory with some striking characteristic that will effectually prevent its being confounded in the recollection with any other establishment. The lust for the last possible particle of window space is also implicitly condemned in the observation that the number of objects exhibited should be restricted, and if they are so cunningly disposed as to set each other off—to be complementary the one to the other—the effect will be much more pleasing and attractive than a lavish profusion that would prove distracting.

The objects displayed should receive help not only from each other, but from the design and decoration of the shop-front, which should conform harmoniously in form, material, and colouring to the class of goods exhibited in the shop.

The materials of which the front is constructed should not have their natural aspect in any way disguised. For example, wood should not be tortured into fantastic curves. The front should, upon occasion, be so recessed as to allow the prospective customer to inspect the windows with comfort—that is, without being jostled by passers-by, and, incidentally, without hindering the pedestrian.

Where the frontage is sufficiently wide, it may be conveniently divided into two equal parts by the entrance, which should be set back sufficiently to afford side views on left and right of the contents of the windows. When it is possible, as in the front of the Compagnie Générale Transatlantique, in the Rue Auber, to divide the front into two portions horizontally, an effect of amplitude is obtained, as well as facilities for decorative treatment by

means of sculpture or otherwise. It is rather surprising to find that Paris offers so few examples of this arrangement.

Inscriptions of all kinds may be made to contribute effectually to the decorative effect of a shop-front, or, by their badness, they may have the opposite influence. They should be used sparingly, should express character, be judiciously disposed, proportioned in size to the importance of the idea which they are intended to convey, and be composed of letters which are in themselves decorative. In Paris, as with us, this ideal is far too seldom realised: much of the lettering being in disgracefully bad taste. Illuminated signs, some of them quite tasteful, are being increasingly used by the Paris shop-keepers; the illuminant being, of course, electricity.

As examples of dignified old shop-fronts in Paris we illustrate two old pharmacies, one of which—that in the Rue du Faubourg St. Honoré—is now, as will be seen,



SHIPPING OFFICES, RUE SCRIBE: MAIN ENTRANCE.



BOOT SHOP, BOULEVARD DE LA MADELEINE.

occupied by a dealer in antiquities, while the other, in the Rue de Grammont, is still devoted to drugs, preserving, we are told, not merely its original outward appearance, but the very utensils and fittings. Both shops date from the period of the First Empire, and possibly the authorship of each is identical.

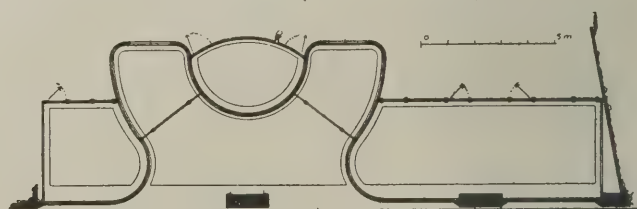
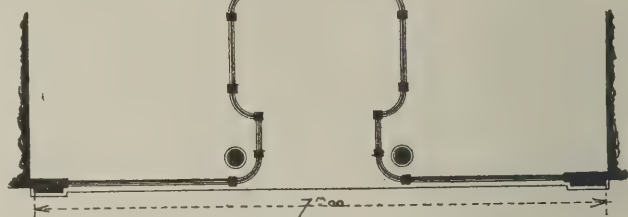
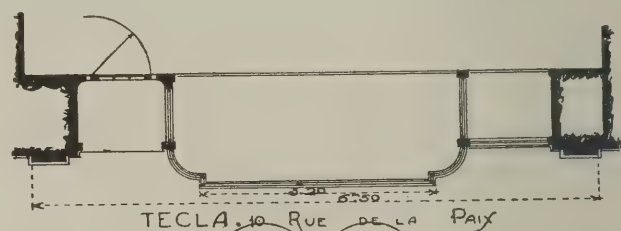
It is perhaps of doubtful propriety to describe the fine front of the Compagnie Générale Transatlantique, in the Rue Auber, as a shop, but the crudeness of the classification will be condoned in contemplation of the dignity of M. Nénot's monumental design. The framework is of bronze, the two figures symbolising respectively Commerce and the French Marine, the decorations comprising marine vegetation. Marine decorations also adorn the two fine flanking doorways. The dolphins above them are in bronze.

The American shipping offices in the Rue Scribe were designed by M. Ch. Breffendille, who has made very effective use of his Order in pilasters, and of various

kinds of marble, the metal-work being relieved with a certain amount of gilding. The front entrance door is of oak varnished, with bevelled glazing.

The dyer's shop in the Boulevard de Courcelles has its front constructed in green marble, with restrained decorative features in bronze. The design, of which the architect was M. J. Marrast, is chiefly characterised by a dignified simplicity of line, but the general effect rather tends to heaviness, the pilasters and the fascia being on too large a scale.

The very modern-looking two-stage shop-front of the refreshment-house in the Rue de Sèvres shows a sufficient expanse of glass. The bronze ornamental detail is partly gilded. The luminous sign, for example, is decorated with gilded garlands. Whether the first word on this sign is intended for the French word for tea, or for the English definite article or definitive adjective is an *équivoque* that may possibly be intentional, seeing the weird essay towards "the English" which in the windows



GRANDS MAGASINS DU PRINTEMPS.

SOME PLANS OF PARIS SHOP FRONTS.



TEA SHOP, RUE DE SÈVRES, PARIS.

quaintly announces "The Lunch"—a form of words that is delicately fragrant of "English as she is wrote."

It is not, of course, here contended that in the matter of shop-fronts Paris leads London. On the whole, we feel strongly disposed to say that the converse is the case, and that London would come out quite triumphant on a fair comparison. In fact, some of the most successful shop-fronts in Paris have been designed and constructed by London firms—a consummation that speaks for itself. It may be noted, however, that apparently the Paris shopkeeper does not clamour for the supply of every inch of glass that the space will hold. He feels that by thus defying the canons of architecture he would offend the artistic taste inherent in the French people, and would thus achieve the opposite effect to that intended, the seeming gain becoming actual loss in the ultimate issue. He knows that more space for the display of wares is of much less account than their artistic disposition, and that the distinction and character at which he aims is largely dependent on architectural effect; whereas the all-glass window, lending itself to lavish profusion of display, is of doubtful commercial wisdom.



General Transatlantic Company's Premises, Rue Auber. H. P. Nénot, Architect.



Dyer's Shop, Boulevard de Courcelles. J. Marrast, Architect.

PARIS SHOP FRONTS.

HOUSING QUESTIONS IN THE
COMMONS.

In the House of Commons last Wednesday, Mr. W. Guinness asked why so little action had been taken under Part I. of the Housing and Town Planning Act, 1909. There was said to be reluctance on the part of authorities to undertake the risk of housing schemes, but why had nothing been done to carry out what was said to be the main and essential feature of the proposals of three years ago? In rural areas there was great shortage of housing accommodation; the effect of past and fear of future legislation had brought about stagnation in building, and owners were not disposed to sink money in working-class dwellings.

Mr. Bentham, member for Gainsborough, said he represented a large agricultural constituency with nearly 100 villages, but in not one of those villages was the housing accommodation adequate, and in many of them the cottages were a perfect disgrace to civilisation.

Lord H. Cavendish-Bentinck agreed that in many parts of the country the Housing Act was a dead letter. In the report for the county of Norfolk the medical officer stated that many of the houses were unfit for habitation and ought to be demolished; but if the tenants were turned out there was nowhere else for them to go. There was not a village in which houses were not wanted. During twenty years the Local Government Board, with all its

experts, had got only 200 cottages built, whereas the Board of Agriculture in three years had procured the erection of 1,000.

In reply, Mr. John Burns said he was so anxious to improve the housing in Norfolk that five weeks ago he gave an inspector instructions to go into that county, see what the local authorities were doing, and enforce upon them the necessity of exercising their powers. Three rural district councils had since applied for loans for housing, and several urban district councils in Norfolk had made similar applications. At Chertsey cottages were now in process of erection on an appropriate site. The local authorities, under the pressure of the Board, were increasingly responding to the call for housing and town planning, and doing their work. Considering the short time the Housing and Town Planning Act had been in operation, and the slowness with which some local authorities, including even the London County Council, moved, he thought that, on the whole, reasonable progress had been made. It had been suggested that three Housing Commissioners should be appointed. Mr. Burns could not accept that suggestion, but he might appoint four or five housing inspectors, who would do more good in one year than the housing commissioners would do in five or six. To take as the measure of housing reform what local authorities themselves did was entirely to ignore what private enterprise was doing, which was seventy or eighty times more than what local authorities attempted.

NEWS ITEMS.

The Architect for St. Paul's Bridge.

Sir Ernest George having been appointed architect for the rebuilding of Southwark Bridge, it is now announced that Sir William Emerson, F.R.I.B.A., will act in a similar capacity in respect to the new St. Paul's Bridge, the engineer for both structures being Mr. Basil Mott. Sir William Emerson, who has been president of the Royal Institute of British Architects, passed the earlier part of his professional career in India, where he designed Lucknow Cathedral, the Bhonnuggur Hospital, the buildings for Allahabad University, the Victoria Memorial at Calcutta, a palace for the Maharajah of Bhonnuggur, the Bombay Markets, and several churches. Among his works in this country are Hamilton House on the Victoria Embankment, the Royal Caledonian Asylum, and St. Mary's Church, Brighton. He was one of the three architects appointed to represent architectural opinion before the Committee of the House of Commons when the Bridge Bill was before Parliament.

A Summer School of Town Planning.

The Association of Garden Cities, in furtherance of Mr. Burns's suggestion, has now decided to hold an experimental summer school of town planning—on University Extension lines—at the Hampstead Garden Suburb during the first fortnight of August. Short courses of lectures will be given, and also practical demonstrations of how town planning should be carried out.

Presentations to Mr. A. Y. Nutt.

Mr. A. Y. Nutt, M.V.O., I.S.O., who has just retired after forty-four years' service at Windsor Castle, has been presented by the staff of his Majesty's Office of Works, the Lord Chamberlain's Department, contractors, workmen, and friends at the Castle, with a silver-mounted dressing-case. Mr. Nutt also received a gift from the Windsor Castle police, in the form of a silver cigarette case.

New Hospital at Hounslow.

On June 1st Lady Jersey laid the foundation-stone of the new hospital at Hounslow, which is being built, as a memorial to King Edward, on a site fronting the main road to Staines. Mr. J. E. Franck, F.R.I.B.A., is the architect.

Bow Church Safe.

Mr. Underwood, F.R.I.B.A., who was consulted on the condition of the tower of the Church of St. Mary-le-Bow, Cheap-side, reports that, in spite of slight decay, the stability of the fabric is not impaired. Certain repairs are to be carried out at a cost of £360.

Forthcoming Archaeological Congress.

The twenty-third annual Congress of Archaeological Societies in union with the Society of Antiquaries of London will be held at Burlington House on Thursday, June 27th, at 10.30 a.m., when Dr. C. H. Read, President of the Society of Antiquaries, will take the chair.

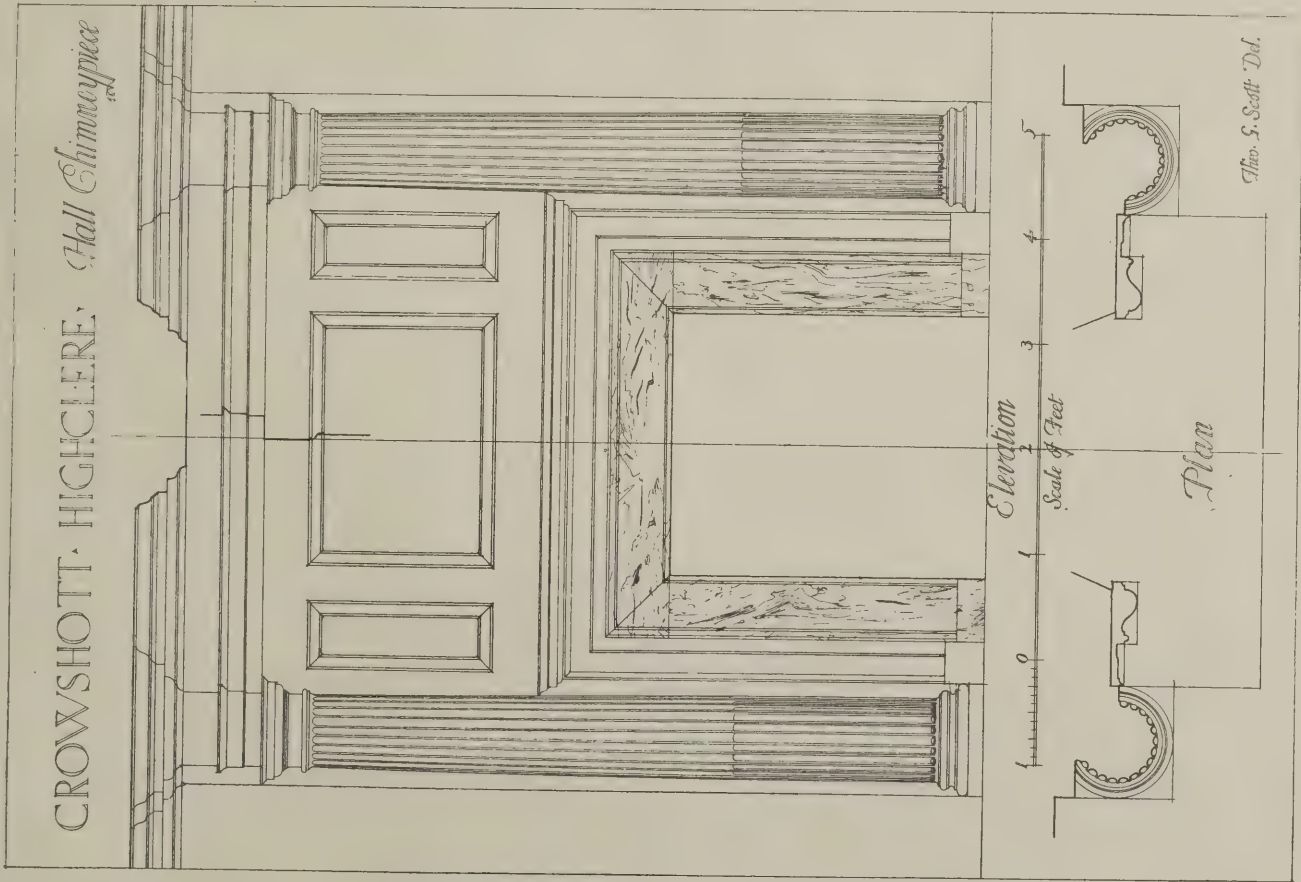
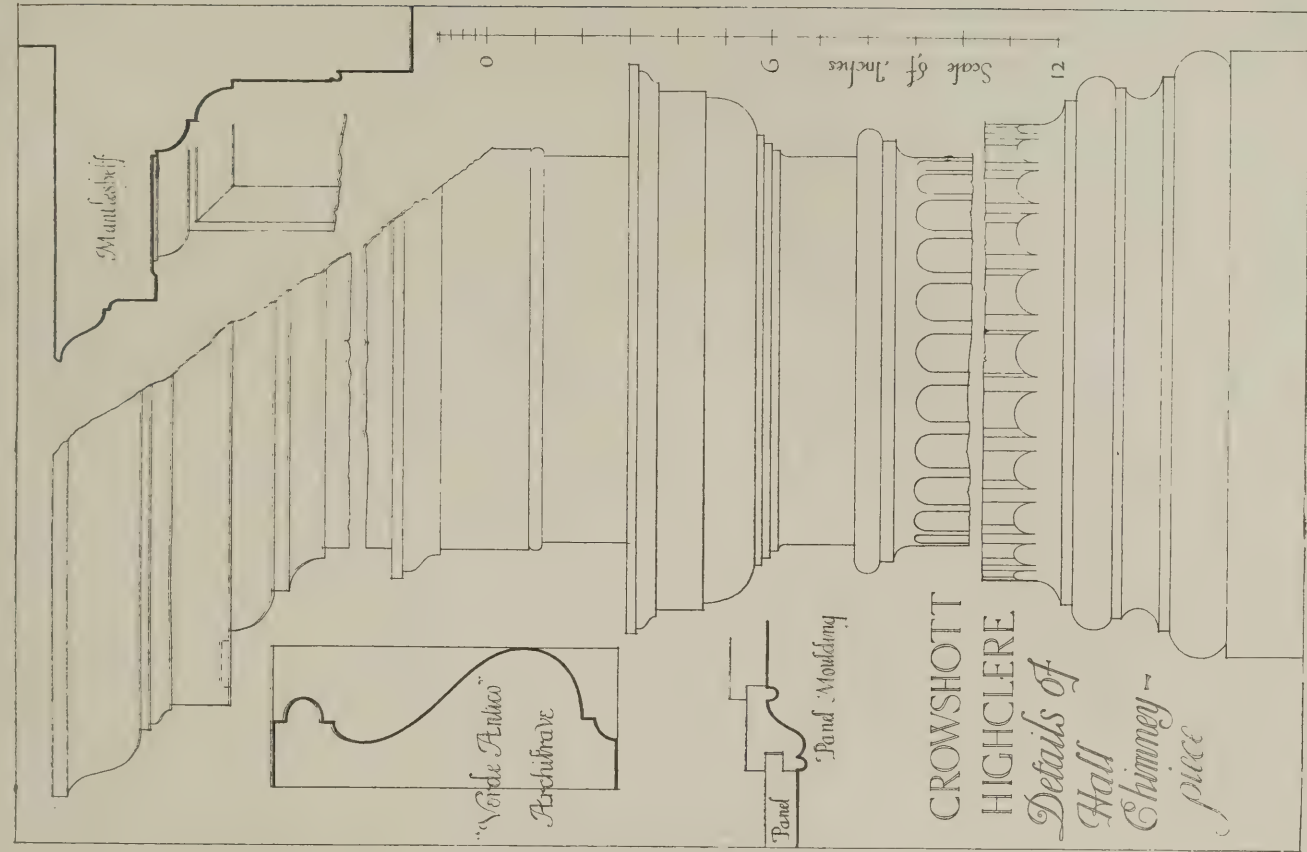
DETAILS OLD AND NEW.—XLIII.

A Modern Chimneypiece.

The hall chimneypiece at "Crowshott," Highclere, designed by Mr. Francis Bacon, is an excellent example of modern work. It is of deal painted white, with a surround of verte antique marble. The design is quite simple, there being an entire absence of applied ornament.



CHIMNEYPiece AT "CROWSHOT," HIGHCLERE.
FRANCIS BACON, ARCHITECT.



LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

THE NEWER RESPONSIBILITIES OF ARCHITECTS.*

BY WILLIAM WOODWARD, F.R.I.B.A.

The author has evidently made a very close and careful study of the important case of Minter v. Waldstein, and from the judgment of Mr. M. Muir Mackenzie, the Official Referee before whom the action was brought, he deduced some useful conclusions.

THE position of client, architect, and builder to-day is altogether different from that existing say forty or fifty years ago. An architect was not then subject to anything like the interference in the performance of his duties which, unfortunately, now too frequently prevails.

Responsibility in building operations is increased, too, very largely by reason of the "rush" attending work, which used to take its leisurely and safe course with corresponding satisfaction to all concerned. The more serious results of this regrettable modern necessity are that architect and builder are made responsible for defects which would not arise if a proper amount of time were allowed, first, for the studious preparation of the drawings and specifications, and, secondly, for an adequate time to build properly, allowing sufficient time between the trades for the work to approach some sort of dryness. When trouble does arise, it is difficult to make judges understand that very many tons of water are still in the walls and fire-resisting floors; that such water must get out somehow or other, and that it is not fair treatment to be compelled to go on with the plastering with walls and floors reeking with moisture, and, worse still, to have to fix well-seasoned joiners' work to wet plaster. It is difficult, too, to make judges understand that the better seasoned the wood is the worse is the effect of moisture upon it.

The trial, "*Minter v. Waldstein*," lasted for thirty-nine consecutive days, commencing on July 5th and terminating on August 18th, 1911, judgment being given on October 20th, 1911. The contract—which was in the form known as "The Institute Form"—was to make certain alterations and additions to a large country mansion in Cambridgeshire, named "New-on Hall." The total cost of the works, including many additions to the works included in the contract, amounted to the sum of about £21,000. The work was commenced in February, 1910, and completed in September, 1910, the defendant moving into the house a few days after September 22nd. Certificates, as usual, were given by the architect during the progress of the works, and on January 20th, 1911, he issued a certificate for £2,750. On February 7th, 1911, he gave a final certificate for £533, stating that the latter sum was the balance of the money due to the plaintiff with the exception of £500, being the retention money under the contract to provide for the making good of defects which might appear during the period of six months after the completion of the works. The defendant, besides denying that he was liable to pay the sums last certified, pleaded a counterclaim for damages and recovery of certain sums which he asserted were improperly included in progress certificates. Some 400 items were set forth by the defendant as those to which he objected; and the bill of variations on the contract prepared by the Quantity Surveyor occupied 327 pages.

Having outlined the history of the case

down to the trial by Mr. M. Muir Mackenzie, Mr. Woodward went on to deduce some important points as affecting client, architect, and builder, which he conceived to be involved. The defendant alleged that letters of January 10th operated to determine the architect's employment and his authority to give a certificate after that date. Mr. Muir Mackenzie raises the question whether an architect can be effectively discharged from his office by the employer alone; and he quotes cases bearing on the point. It seems that the architect, being the one agreed upon between the parties, cannot be discharged by the employer alone. The defendant placed reliance on Clause 3 of the Articles of Agreement, which provides for the nomination by the employer, subject to objection by the contractor, of a fresh architect in the event of the death of the one named in the contract, or his ceasing to be the architect for the purposes of the contract, but Mr. Muir Mackenzie decided that that clause did not operate. Mr. Woodward gathers also that an architect's certificate might not be justifiably held to include for work outside the work contemplated in the contract, and that "in regard to all extra work ordered, either under the contract or in circumstances which created in the defendant a liability to pay for it, the provisions of the contract as to payment were to be observed—i.e., that on the one side defendant was not until the completion of the whole works liable to pay except on the interim certificates of the architect, and then only for the amount certified, and that, on the other side, the certificates were to include the price of all the work ordered as above mentioned." Mr. Woodward therefore presumes that in this particular case the architect was justified in issuing certificates for work which, although not specifically included in the contract, were executed with the cognisance of the employer, and were therefore subject to all the conditions of the contract.

Mr. Muir Mackenzie decides that, where the particular surveyor named in the contract has measured and valued additions for which the defendant was liable under the contract, or an omission properly authorised, then such measurement and valuation are decisive. As it is not infrequently the case that builders employ a surveyor to measure and value for them the variations on the contract, it is well to bear in mind that the ultimate decision on these matters rests with the surveyor named in the contract.

As to the responsibility of the architect for the quality of the timber and general construction of the roofs and floors. In Mr. Muir Mackenzie's opinion the authorities show that, in a contract like this, the power of the architect to order or sanction variations does not empower him to authorise departures from the terms of the contract which involved the substitution, in the whole or part of the work, of "inferior" materials and workmanship for those prescribed and charged for in the contract price so as to prejudice the strength and stability of the building.

Mr. Muir Mackenzie states his opinion that as regards the "quality" of the wood,

the onus of proving that it was inferior and unseasoned was on the defendant, and that he has not discharged it.

A matter of some importance was that the defendant claimed, in his damages, the cost, or some of the cost, of removing, storing, and bringing back his furniture during the works of repair of defects; and further the cost of employing professional assistance in the work of reconstruction or repair; but, on the authority of "*Green v. Eales*," Mr. Muir Mackenzie disallowed these claims.

Another matter of some importance raised in this case was with reference to what were, and what were not, authorised extras. The defendant's contention was in effect that no extra work could be charged for unless authorised by writing or drawings signed by the architect, or by a written approval after having been done. The plaintiff contended, in opposition to this, that he (the plaintiff) was entitled to be paid for all additional or extra work or materials which had in fact been ordered or sanctioned by the architect or by the clerk of works, or by the architect's deputy or assistant, or by the defendant or his wife, or had been rendered necessary in consequence of variations so ordered or sanctioned. Clauses 12 and 13 of the conditions of contract deal with this matter. On the construction of these clauses Mr. Muir Mackenzie found in favour of the defendant. The summing up of Mr. Justice Day in "*London School Board v. Wall*" is cited, in addition to other cases, in support of this view. The question as to how far the defendant could be held liable for extras of which, perhaps, he had no cognisance is dealt with as follows by Mr. Muir Mackenzie. He says: "On the one hand, where an employer has protected himself by a written contract for a lump sum, the mere fact that he sees, sanctions, or permits, or discusses variations in the carrying out of the contract, does not impose on him a liability to pay any extra cost, unless he is plainly told, or must know from the circumstances, that the variations will mean an extra charge to him. Being, of course, ignorant of the details of the contract work, he is entitled to the protection of his contract." The cases quoted in favour of this view are "*Lovelock v. King*" and "*Thausis Company v. McElroy*." But, on the other hand, it is equally the law that if an employer desires the builder to make alterations, and additions, and omissions, and sees extra expenditure being incurred upon him of which he takes the benefit, he cannot refuse to pay on the ground that the expenditure was incurred without proper orders given for the purpose. The case quoted in favour of this view is "*Hill v. South Staffordshire Railway Company*."

The question of discount from payment to sub-contractors also arose in this case. It appears that the condition in the bill of quantities is quite clear on the subject of provisional items supplied by firms, viz., "That the contractors must pay the amounts in full and produce the receipts before the amounts can be included in the certificates on which the defendant is liable." The defendant claimed to have a deduction of 5 per cent. from the account of one of the sub-contractors on the ground that if it had been paid promptly there would have been a discount of 5 per cent. of which the defendant would have been entitled to the benefit. Mr. Muir Mackenzie disallowed this objection, and added that he thought Section 28 of the conditions of contract equally clear, and

* Extracts from a paper read before the Royal Institute of British Architects, June 3rd.

that only amounts which had been paid to firms and tradesmen could be included in the certificates. This Clause 28 differs from the above quoted condition in the bill of quantities, which provides for the production of the receipts of the sub-contractor by the contractor before the amount is included in the certificate. Clause 28 does not require the production of such receipt before a certificate is granted in which the amount is to be included, and this fact has caused in other cases much discussion between architects and builders.

The author could not help expressing regret that the plaintiff was not allowed to do what he was perfectly willing to do, and in fact was bound to do under Clause 17 of the contract, and that was to go down and make good all defects which had appeared in the house before the first architect was superseded by another.

As regards the responsibility for making good defects arising from faulty construction, Mr. Muir Mackenzie has not laid down any clear and decided opinion, but he rather judges each item on its merits. The author had hitherto thought that, as regards defective materials and workmanship, the builder was responsible, but as regards the mere carrying out of the designs and directions of the architect, the architect or the client was responsible for bad results. H.M. Office of Works deals with this particular matter in a manner which, to the author's mind, was quite fair. There is a clause in their contracts which runs as follows: "But if any failure shall have arisen in the work, or any part thereof, by reason of a defect in the design of the architect, then the builder shall not be responsible for such failure, and the same shall be made good as extra work under Article 7 of these conditions if so required by the Commissioners."

There can be little doubt that the many actions which have been fought during the last few years have brought to the front responsibilities and troubles never before realised by architects and builders. Our present conditions of contract do not provide in any way clearly for the settlement of these troubles, and it becomes day by day more urgent that these conditions of contract shall be revised, for the protection alike of client, architect, and builder.

HOUSE AT GERRARD'S CROSS.

This house has been erected at a cost of £820, inclusive. The desire of the client was to get as much accommodation as possible for the sum to be expended, and therefore there was no money to be spent on effect. The simple Georgian treatment tended to reduce the cost, and also seemed suited to the locality. Local bricks and tiles were used, and a little relief was gained by using tile quoins. The architects were Messrs. Acworth and Sheppard,

of 5, York Buildings, Adelphi, W.C., and the builders were Messrs. J. C. Richards and Co., of Kilburn.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Memorials in the Parks.

During the discussion on the Vote for Royal Parks and Pleasure Gardens in Committee of Supply of the House of Commons last week, Lord A. Thynne took exception to the character of the memorials that were put in some of the parks. For instance, he said, they had the Duke of York Steps. There they had a very handsome memorial obviously designed to be put in the middle of a straight line, but it had been put at the corner of a fence. In a case of that sort the Office of Works had not bestowed two minutes' consideration to the choice of a site suitable to the character of the memorial, or to the choice of a design suitable to the particular site. In the first place they wanted in the Office of Works an expert in landscape gardening and in the second place an expert in forestry. The reason why the Royal Parks could not be compared favourably with the parks maintained by the London County Council was largely the absence of expert advice in landscape gardening and forestry.

Mr. Whitehouse pressed for information as to what view the Government took of the feeling of the House regarding the King Edward Memorial. He hoped the design had been referred back. He repeated his protest against erecting statuary in public parks.

Captain Jessel suggested that the time had come for replacing the present light standards in the Mall by more ornamental standards.

Mr. Noel Buxton criticised the King Edward Memorial site in Green Park, and maintained that the memorial should not be such that the Green Park would be a setting for a single monument as St. James's Park was already a setting for the Queen Victoria Memorial. The improvement of Hyde Park Corner would, in his opinion, prove a better memorial than the one proposed.

Mr. Burdett-Coutts also spoke against the selected site for the King Edward Memorial and the subordination of the actual statue of King Edward in the design.

Several other members raised questions regarding the administration of the Royal Parks and Gardens.

Mr. Wedgwood Benn, replying on behalf of the First Commissioner of Works, said that it was proposed to replace the lamps in the Mall with others of a more worthy design. He assured Lord A. Thynne, and other members who criticised the technical ability of the Department's officers in re-

gard to landscape gardening, that they were under a misapprehension. The superintendent (Mr. Gardner) was a man of very great experience in landscape gardening and forestry and advice was given by a well-known expert in forestry. With regard to the King Edward Memorial he did not wish to repeat his previous statement on the subject. The point narrowed itself down to this. The only decision which the First Commissioner had to make was whether or not the Green Park site was a proper site. The matter of design and the matter of the disposition of the money were matters which could have been raised before the Memorial Committee. The present scheme enabled a large space of over eight acres to be opened in Shadwell.

Rodin's "Burghers of Calais."

On the vote for the Houses of Parliament Buildings, Mr. Whitehouse declared that the new Victoria Embankment Garden was not a suitable place for the erection of Rodin's group—the "Burghers of Calais." The statuary required an historic and especially an architectural setting. He suggested that the Office of Works should remove at an early date the varnish from the very beautiful oak-work which adorned the Houses of Parliament.

The Maclise Frescoes.

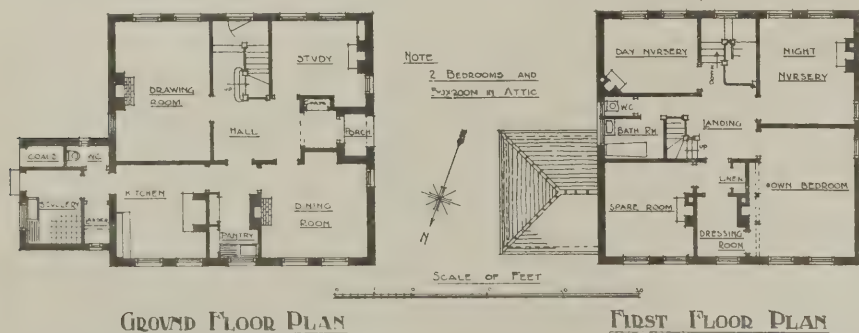
Mr. John O'Connor asked what steps were being taken to preserve from decay the Maclise frescoes in the Royal Gallery representing the death of Nelson and the meeting of Wellington and Blücher on the field of Waterloo.

The Ladies' Gallery Grille.

Mr. Alexander Whyte suggested that the grille in front of the Ladies' Gallery should be removed.

Sir J. D. Rees introduced the subject of the lighting of the Chamber, and wished an assurance that the opinion of the House would be taken before electric lighting was substituted for gas lighting.

Mr. Wedgwood Benn, in reply, said the facts with regard to the Rodin group of statuary were these. A copy of the original statue stood in a square in Calais itself, and a copy was very generously given to the First Commissioner by the National Art Collection Fund. It awaited some place on which to stand and it was proposed to put it in some suitable place in the Victoria Tower Gardens. He did not know that he could give any particular historical reason why it should be placed there except that Queen Philippa had some association with the Abbey of Westminster, where she was crowned and buried. The matter could not be completed for some time, nor until the County Council had carried out its projected improvements. It would be well into next year before any definite steps could be taken. With regard to the Maclise frescoes in the Royal Gallery, the Office of Works had the constant advantage of the advice of Sir Arthur Church, and the Committee might rest assured that such steps were taken as were necessary to safeguard and restore those works of art. As to the removal of the grille from the Ladies' Gallery, he did not think any person, with one or two exceptions, had expressed a view favourable to the removal of the grille. He could not undertake to carry out the suggestion unless it could be shown that there was a majority of opinion among honourable members in favour of the removal and also a similar balance of opinion among the ladies who occupied the gallery. As to the lighting of the Chamber, it was necessary that there should be a change. At present the House was lighted by



HOUSE AT GERRARD'S CROSS, BUCKS. ACWORTH AND SHEPPARD, ARCHITECTS.



North Front, to Road.

groups of circular Argand burners of a very old-fashioned type, and in order to maintain the proper amount of illumination on the floor of the House some alteration was necessary. The substitution of clusters of electric lamps would produce exactly the same effect, as regards the strength and tone of the light, as that produced by gas, with other advantages in the way of economy and improvement of the ventilation. The saving would be £140 yearly. They would be able to revolve the plant which ventilated the House at a greater speed, and they would get a better flow of air through the Chamber. At present, if they turned the apparatus beyond a certain speed there was a danger of blowing the lights out.

In Defence of Gaslight.

Lord Balcarras regretted the proposal to change the lighting. He could not find out after all his inquiries in the House of Commons that gas had a fatiguing effect as an illuminant or that there was a demand for this alteration. The lighting and ventilation were infinitely superior to anything that could be found in any other chamber or place of assembly where any



South Front, to Garden.



Garden Terrace.

HOUSE AT GERRARD'S CROSS, BUCKS ACWORTH AND SHEPPARD,
ARCHITECTS.

service or performance went on uninterruptedly hour after hour.

The Neo-Classic "Rage."

Mr. Noel Buxton, who urged that the removal of the varnish from the oak carving should be proceeded with at once, said that in time to come, when the rage for neo-Classic building had had its day, there would be a reversion to Gothic, and that House would come to be regarded in a hundred years as by far the greatest memorial of the Victorian Age. It was, therefore, unworthy that such a trivial sum required to make it as beautiful as it should be in regard to good carving should not be readily expended.

Ventilation.

Mr. C. Bathurst, referring to the ventilation of the Chamber, said that during the Autumn Session he found his body in a fairly hot climate and his legs suffering from the blast of an east wind.

Mr. Wedgwood Benn said that if he was informed of variations in the temperature he would have investigations made. With

regard to the lighting he hoped members would not come to a final opinion before seeing the temporary and experimental alteration.

Designs for Public Buildings.

On the vote for Public Buildings, Mr. Whitehouse directed attention to the practice of allowing the designs for the great Departmental buildings to be settled within the Office of Works, a practice which prevented the architects of the country generally from entering a competition for the designing of Government buildings. The designs, he thought, ought to be open to national and if necessary international competition.

Lord A. Thynne recommended the Government to adopt the policy of selecting a wider range within which to build public offices. Economy would result if they refrained from concentrating Government offices in Whitehall.

Mr. Wedgwood Benn remarked that where possible buildings had been erected on cheaper sites. For instance, the Stationery Office was being put up on the South side of the river. They would be defeating the object they had in view in concentrating the public services if they dispersed the buildings in the manner suggested.

The various votes were agreed to.

THE INTERNATIONAL
EXHIBITION.

The "International Society of Painters, Sculptors, and Gravers" should surely change its title, or the title of its exhibitions, for, except for the loan of a picture by Matthew Maris, this is entirely an English exhibition, some painters with foreign-looking names being practically English artists. And, in fact, a note to the catalogue informs us that the present exhibition is intended to illustrate "the most independent and progressive elements of contemporary landscape in Great Britain." Are we to presume, then, that the notable names omitted are not "independent and progressive" landscape painters? Or perhaps they are too independent.

However, the result is that this is the pleasantest and most enjoyable exhibition that the society has held, for it is in figure painting that the eccentricities and uglinesses of the ultra-modern school of painters are mostly exemplified, and we are glad this time to escape them. The collection at the Grafton Gallery contains quite a number of interesting and clever landscapes. Some of them are by deceased artists; among these are seven of Watts's small landscape studies, of great interest as examples of the impressions of landscape by a great artist who was primarily a figure painter, and one large upright landscape by him, which we think we remember once at the Royal Academy, a work singular and striking in composition, and puzzling in colour, for it is entitled "Green Summer," and green is just what it gives no impression of. There are also some large Venice water-colours by the late Arthur Melville, in his effective impressionist style, full of brilliant suggestion in colour, but with the architecture (as is too often the case with painters of effects) very badly treated; the Salute church, which is prominent in two of them, is barely recognisable. Another picture of his, "The Storm," is a powerful glimpse of effect, but in its manner it looks painfully like a chromolithograph, or a work painted for reproduction in colour.

Among the important landscapes is a fine one by Mr. Hughes Stanton, "Mountain Road in Provence," in his usual style of building rather than painting a landscape; "A Surrey Mill," by Mr. Bertram Priestman, who can be broad and powerful without losing coherence; and a large landscape by Mr. Walter Russell, "The Great Heath," the general power of which is much spoiled by the confused and apparently careless painting of the foreground. Mr. W. Rothenstein paints nature's building effectively in his cliff picture, "Nature's Ramparts"; and Mr. Hill and Mr. Sydney Lee deal effectively with the pictorial aspects of man's building, the former in "Charing Cross Railway Bridge," the latter in "The Barbican Gate," a picture which we seem to remember in more than one exhibition. Mr. Peppercorn, in his fine bold sketch, "A Surrey Hillside," may be congratulated on having discovered that there is light and colour in nature, and that she does make trees of an inky black. Mr. Sauter has realised a fine effect of shimmering sunlight in "The Avenue." Among other points of interest in the exhibition are a small collection of the landscapes of the late Mr. Charles, all fine and forcible in composition though somewhat spoiled by a dry, unsympathetic method, some of Mr. Greaves's Whistler-like effects, and some very good pictures by the late Arthur Lemon, a painter whose works are of more value than was recognised in his lifetime.

The sketches and studies in the long gallery are not very interesting, and some of them are quite too slight to be worth exhibiting. But, as a whole, the exhibition is one that can be visited with unmixed pleasure, which has not generally been the case with the International Society's displays.

TRADE AND CRAFT.

"More Daylight for Dim Interiors."

The most obvious thing about the business quarters of big cities is that the congestion of tall buildings causes an enormous number of dim interiors. If an auctioneer or an estate agent has to dispose of or to find a tenant for a business building, he is happy if he is able to announce with some degree of approximation to the truth that there is "a well-lighted interior" toward; in which case, however, his ideas on the efficiency of the illumination are likely to prove far more optimistic than those of the applicant for the "keys to view." When they twain meet on the spot, each will insinuate, more or less politely, that the other's vision needs attention from the ophthalmologist, which is a word that should not be carelessly thrown about in the semi-obscure. There would be the less need to trouble the expert with the formidable designation if early recourse were had to an effective means of conducting daylight artificially to dim interiors from which it is artificially, though accidentally, kept out. Messrs. Pilkington Brothers, Ltd., of St. Helens, devoting very careful attention to the subject, ascertained that many rooms remain dark and gloomy because the light enters at such an angle as to reach only the small space around the window. Now, it occurs to us that it is for a very similar reason that one's eyesight may become dim. In such a case, the expert with the sesquipedalian appellation will recommend correction for astigmatism, or for some other structural defect of the *néo-Grec* style. He will advise the adoption of glasses. These being acquired and duly adjusted, the patient's gratitude for being permitted to see clearly is tempered with regret that he lost so much pleasure and profit through not resorting earlier to the expert with the horrific name. This moral seems to be applicable to the too tardily treated dim interiors of buildings. The windows of a building being its eyes, the possibility of correcting their visual defects seems to be a very reasonable proposition. It ought, indeed, to be much less difficult to correct the visual defects of a building than those of the infinitely more delicate structure of the human eye. Messrs. Pilkington, in effect, supply the eyes of a building with "spectacles," which effectually correct their vision. The analogy must not be strained. The points of difference are quite obvious, although the essential principle is pretty much the same in each case. You do not see *through* Messrs. Pilkington's glasses, which are prismatic. They are manufactured in three different angles, to be used according to the position of the windows to be filled, so that every ray of light available is diverted horizontally, securing the even and natural illumination of the whole room. How this is done is very lucidly explained in an illustrated pamphlet bearing the title which heads the present notice. The system is of peculiar value in directing light to the interiors of shops where the lower part of the front window is used as a show-case excluding the light; or in banks and similar premises where window screens are necessary.

SOCIETIES AND INSTITUTIONS.

South Wales Institute of Architects.

The annual general meeting of the above Institute was held at Cardiff on June 2nd. The change of title from the Cardiff, South Wales, and Monmouthshire Architects' Society to the South Wales Institute of Architects was confirmed. The hon. treasurer submitted his annual report and accounts, which showed a steady increase in membership and a satisfactory financial position. The retiring president (Mr. G. E. Halliday, F.R.I.B.A.) was again unanimously elected. Messrs. E. W. M. Corbett, F.R.I.B.A., and John G. Groves, F.R.I.B.A., were re-elected vice-presidents; Mr. Harry Teather, F.R.I.B.A., hon. treasurer; Mr. E. H. Fawckner, F.R.I.B.A., hon. auditor; Mr. Edgar Down, F.R.I.B.A., hon. librarian; and Mr. J. A. Sant, hon. secretary. Messrs. Cecil Wilson, David Morgan, Chorlton James, Llewellyn Smith, J. W. Rodger, and H. Sesom Hiley were elected members of the council.

Architectural Association of Ireland.

At the last meeting of the Association the officers for the ensuing session were elected as follows: President, Mr. Geo. L. O'Connor; vice-presidents, Messrs. A. M. Reid and F. Sparrow. Committee—Messrs. P. L. Dickenson, N. G. Leask, A. G. C. Millar, H. J. Lundy, C. H. Mitchell, J. E. Burke, R. O'Brien Smyth, J. M. Mitchell, and L. Gieron. Hon. secretaries, H. Auberry and J. J. Robinson. The President announced that the annual excursion would be held early in July, the venue being Liverpool, and that Professor Reilly, of the University, had kindly offered to act as cicerone.

The Surveyors' Institution.

The forty-fourth annual meeting of the Surveyors' Institution was held last week, the Hon. Edward Gerald Strutt (who had been elected president for the ensuing year, in succession to Mr. W. E. Horne, M.P.) presiding. The annual report, read by Mr. Alexander Goddard, the secretary, showed that the membership had increased by 205 during the year, the roll now numbering 4,705, inclusive of twenty-four honorary members. Over 65 per cent. of the English and Welsh, and 95 per cent. of the Scottish candidates satisfied the examiners. The library had been enriched by a bequest of books by the late Mr. T. M. Rickman. The institution building had been enlarged and improved under the supervision of Mr. Paul Waterhouse, whose father was the architect of the building. The vice-presidents for the year were elected as follows: Mr. H. Chatfield Clarke, F.R.I.B.A., Mr. E. B. I'Anson, F.R.I.B.A., Mr. W. E. Woolley, and Mr. John Farrer, and there were added to the Council Mr. J. H. Sabin, Mr. J. Inglis Davidson, and Mr. J. McClure Clark.

York and Yorkshire Architectural Society.

Mr. H. E. Henderson, who has been for some time hon. secretary of the York and Yorkshire Architectural Society, and who is leaving for Nairobi, British East Africa, was entertained to dinner by the members of the Society on June 5th. Mr. A. B. Burleigh, president, during the evening was in the chair, and presented Mr. Henderson with a suit case from the members and referred in eulogistic terms to the work which he had done as their hon. secretary.

NEW BOOKS.

House Painting and Decoration.

The work of the house-painter is one of those things which are by no means so simple as they look, as the amateur soon finds out when, either to amuse himself or to save expense of labour, he makes an attempt on it. Serious work of the kind is best left to the tradesman who has been trained to do it; but as there are innumerable odd jobs of painting, whitewashing, or distempering, which will either be done by the amateur or left undone, the publication of a manual affording guidance to the unskilled is perhaps justified. Such guidance is not likely to increase very materially the volume of work done by amateurs, but will doubtless tend to improve its quality. The "Popular Guide" to house painting and decoration which has been prepared by Mr. Arthur Seymour Jennings will doubtless, therefore, do more good than harm in giving sound advice and safe guidance to those who know little or nothing about house painting, especially since apprentices and learners come into this category. Architects also may find in it many useful hints as to methods and materials about which it is necessary that they should possess a certain degree of knowledge.

House Painting and Decoration. A Popular Guide. By Arthur Seymour Jennings. London: Thomas Tofts, 93 and 94, Chancery Lane. Pp. 132, 8½ in. by 5½ in. Price 2s. net.

The Technics of Painting.

This is a small elementary guide—a few score of pages—for students and others who have to learn what are the characteristics of good and bad materials in practical painting, which is a most important matter in an age when the materials of the painter's craft have to be taken on trust. Painting grounds, mediums, pigments, varnishes, etc., are succinctly dealt with, the information being essentially applicable to everyday work. The author combines the qualities of a practising artist with those of an instructor, and his primer can be thoroughly recommended.

The Technics of Painting. By George M. Battus. Glasgow: James Maclehose and Sons. Price 2s. 6d. nett.

New "Homeland" Guides.

The latest additions to the well-known series of guides issued by the Homeland Association are three dealing respectively with the Westward Ho! district (price 3d. nett), a larger book giving full details of the "West Country"—Somerset, Dorset, Devon, and Cornwall (price 1s. nett), and the town of Reading (price 3d. nett). All three contain short descriptive accounts of local features of interest, together with particulars of situation, population, cost of living, etc. The publishers' offices are at 15, Bedford Street, Strand.

"The Town Planning Review."

The most important articles in the current issue of "The Town Planning Review," the journal of the Department of Civic Design of the School of Architecture of the University of Liverpool, are "Town Planning in Australasia," by Mr. Charles C. Reade, assistant secretary of the Garden Cities Association, who presents several views and plans showing the lay-outs of Adelaide, Sydney, and Auckland, which are all on "the prosaic checker-board model"; "The Monumental Qualities in Architecture," by Prof. C. H. Reilly, a paper read before the Irish Architectural Association, leading off with the characteristic observation that "on all sides we seem agreed

that the chief weakness of our modern architecture lies in its lack of the qualities we somewhat vaguely sum up in the word 'monumental'; and a short but interesting "Introduction to the Planning of Modern Italian Towns," by Professor S. D. Adshad, who illustrates his notes with a series of interesting views. This number begins the third volume of the "Review," and contains, as a new feature for continuation, examples illustrating notable features of English towns, the object being to show what has been accomplished in the distant or immediate past, containing suggestion for present-day use. The illustrated "Chronicle of Passing Events" is not the least valuable feature of a publication that is ably fulfilling an important mission.

THE LIGHTING OF THE HOUSE
OF COMMONS.

The following report to the First Commissioner of Works regarding a proposal to substitute electric light for gas in the Debating Chamber of the House of Commons has been issued as a White Paper, which is signed by Dr. E. Treacher Collins, F.R.C.S., L.R.C.P., who says:—

"On April 26th, 1912, I, together with Dr. Parkes, visited the Debating Chamber at the House of Commons and inspected the present arrangements for lighting it with gas, and the proposed new arrangements for electric lighting, in order to see if the latter were in any way likely to be injurious to the eyesight of members of Parliament.

"I found that the proposed electric lighting is to be effected by groups of three metal filament incandescent lamps, enclosed in a holophane globe, which is placed over a square pane of ground glass having an amber tint, and an ornamental pattern on it.

"(a) Ultra-violet rays may produce irritation of the eyes; they are to a great extent cut off by the passage of light through glass, and are completely cut off by glass of an amber tint.

"The rays from the electric lamps at the House of Commons will be filtered by passage through three layers of glass, (i.) that covering the lamp itself, (ii.) the holophane globe, (iii.) the ornamental pane of glass. The ultra-violet rays will be cut off by the amber colour of the latter. There is, therefore, no fear that the eyesight of members of Parliament will be affected by ultra-violet rays.

"(b) An amount of illumination equal to one candle foot is the minimum amount usually considered requisite for reading purposes. I was informed that the amount of illumination on the benches with the present gas lighting is four-fifths of a candle foot and that the same amount or more, as I should think desirable, can be obtained with the electric lighting.

"The amount of illumination in all parts of the Debating Chamber is not the same. The illumination from the roof is supplemented on the back benches by lamps fixed to the pillars in front of them. These do what I was told was required of them, i.e., light up the faces of members so that they can be seen by the Speaker. They are not, however, situated in the best position to enable members on the back benches to read. For this purpose it would be desirable that the light should come from behind them.

"(c) Uniformity of illumination. Variations in the intensity of illumination at its source so that there are glittering or glaring points is often found to be a source

of discomfort to the eyes. In the squares in the roof of the Debating Chamber I found the illumination to be more uniformly diffused and freer from points of a glittering character when they were lit by electric light than when they were lit by gas. This is accounted for by the dispersion of light which is produced by the holophane globes around the electric lamps."

THE STANDARDISATION OF
CATALOGUES.

At a meeting of the Junior Institution of Engineers last week, Mr. Arthur Bourne gave a lecture on the "Standardisation of Engineering Catalogues." He pointed out that, although the initiation of the movement for the standardisation of trade literature had its birth several years ago, manufacturers both in this and other countries seemed slow to move definitely in the matter, and it would appear that after all it would have to be left to private enterprise to invent and produce a satisfactory system whereby the chaotic conditions under which manufacturers were at present compelled to introduce their productions to the notice of consumers could be finally eradicated. Manufacturers had not been slow to realise the very great benefit accruing from scientific and systematic advertising in the technical and daily Press; why then should not a little more care, science, and system be brought to bear on the extremely important question of catalogue production upon which so much money was spent? Under existing conditions it was really difficult to know how to file catalogues, and of the many systems in vogue he doubted if any was really satisfactory.

He advocated not only the adoption of a standard size, but also the confining of one article to one catalogue. Manufacturers seemed at the present time to be devoting a considerable amount of attention to export trade, but in his opinion the large amounts spent annually in the despatch of elaborate and costly catalogues abroad was for all practical purposes wasted. What buyers abroad welcomed was literature that gave not only detailed illustrations, but also full and complete information, such as net and gross weights, shipping measurements, code words, and approximate prices, so that if necessary a quotation could be given without having to refer home. It was really surprising what a large percentage of catalogues failed in this respect.

In conclusion the lecturer pointed out that, although the systematic treatment of this complex subject was not without many difficulties, yet, the great need and desire for immediate reform being established, the engineering profession would universally welcome a practical system of dealing with trade information in their offices.

OBITUARY.

M. Raoul Larche.

The French sculptor M. Raoul Larche died on Tuesday, June 4th, from injuries which he had received on the preceding Sunday, when he was knocked down by a motor car. M. Raoul Larche was born at Saint-André-de-Cubzac (Gironde) in 1860. He was awarded the *medaille d'honneur* for sculpture at the Salon in 1910, and one of his best works, "Violettes," has been placed in the Luxembourg. M. Raoul Larche was an officer of the Legion of Honour.

THE STRUCTURE OF STA. SOPHIA.

SERIOUS QUESTIONS AS TO ITS STABILITY.



THE CHURCH OF STA. SOPHIA, CONSTANTINOPLE.

AS stated in this journal a few weeks ago, the structural stability of the great church of Sta. Sophia at Constantinople is very seriously questioned—so much so that, without extensive reparation, it is declared, the dome will not hold together for more than another twenty years. This being the case, it is opportune to give an exact account of the construction of the building, more especially as, among our illustrations, we are able to include as the Centre Plate in this issue a fine isometric drawing by the well-known French architect M Prost, who, together with an Italian architect, made an examination and report on the building two or three years ago, by request of the Turkish Government.

The Church of Sta. Sophia was erected by the Emperor Justinian A.D. 532-7, on the site of one which had been built by Constantine the Great, and afterwards destroyed by fire. The task of superintending the erection of the existing church was entrusted to two celebrated architects—Anthemius of Tralles, in Asia Minor, and Isodorus of Miletus. Wishing to avert from it the fate of its predecessor, the Emperor gave instructions that the new building should, so far as possible, be rendered fireproof. But, unfortunately, it was less easy to guard against another equally serious element of danger, and twenty-two years after the dedication the eastern portion of the dome was shattered by an earthquake. It was speedily rebuilt, 25 ft. being added to its height; while the buttresses, which had originally been carried no higher than the springing level of the great arches, were raised to the present height.

Records also exist of repairs to the supporting arches in the ninth and tenth centuries, and at a date still more recent the

dome itself was again fractured by an earthquake.

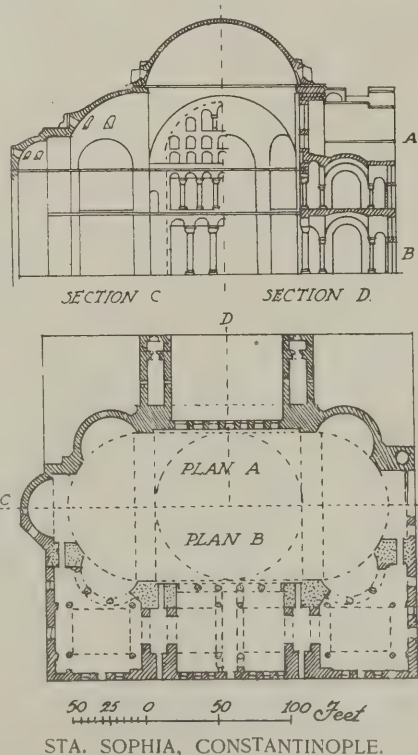
After the fall of Constantinople, A.D. 1453, the church was divested of its arrangements for Christian worship, though its general structural character remained unchanged.

In the construction of the church the pendentive, in its simplest yet most complete form, is the agency for the conversion of the square plan below into a circular one

above, in order to form a fitting base from which to spring the dome (see Fig. 2).

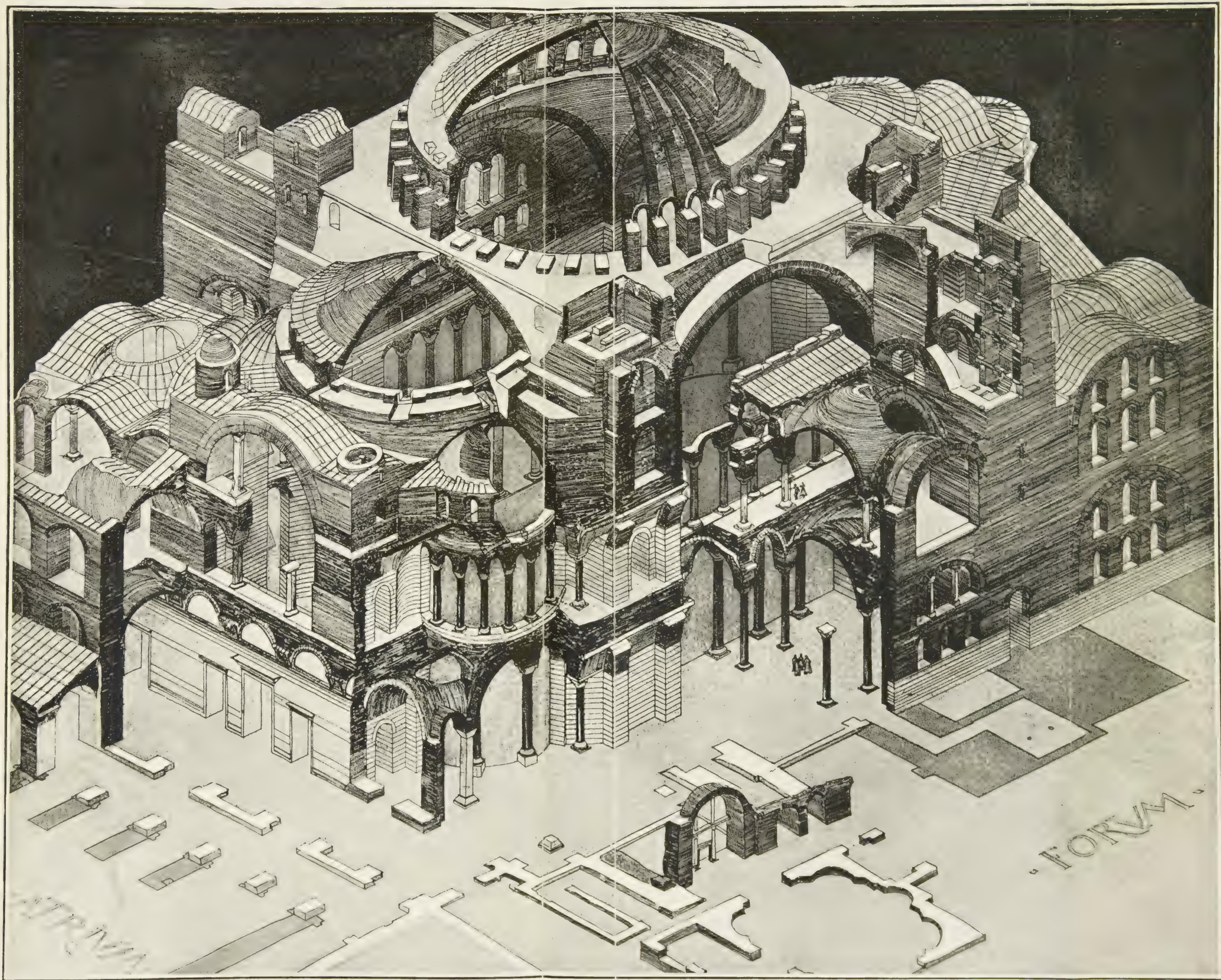
The general scheme of the church seems to have been a Greek cross with a central dome. This idea, however, was not carried out in its integrity, for, of the four arms of the cross, those on the north and south are screened off from the central space by arcades, which support galleries and clerestory walls, only those on the east and west, which are vaulted by semi-domes of nearly the same span as the central dome, being comprised in the body of the church. Opening out from these latter are smaller extensions, or exedrae, the aggregate presenting an unobstructed area exceeding 24,500 sq. ft., covered by a graduated system of domical vaulting, springing from one common level of 74 ft. from the floor, and rising higher and higher, until it culminates in the grand central dome.

This extensive system of vaulting is mainly dependent on eight massive piers, each occupying an area of nearly 500 sq. ft. and carefully constructed of large dressed blocks of hard stone. The piers for the support of the central structure rise from the angles of a square, but are so arranged as to leave openings to the main extensions of 103 ft. in width, and on the north and south sides of only 74 ft. The square plan of the central compartment is obtained by forming a break of 3 ft. in each pier; this defines the internal angles and provides the necessary planes from which to spring the four great arches that receive the pendentives. On the east and west these arches support the dome, and are brick barrel vaults about 13 ft. on the soffit and 6 ft. in thickness; they are open to the large hemispherical vaults that abut against them. The corresponding arches on the north and south sides are not the real supports for the dome, but are chiefly for the purpose of giving uniformity to the pendentives. They



STA. SOPHIA, CONSTANTINOPLE.





THE CHURCH OF HIA. SOPHIA, CONSTANTINOPLE. A STUDY OF ITS STRUCTURE, AS EXISTING. BY H. PROST

have a width of 3 ft. on the soffit, which agrees with the break in the piers (Fig. 3).

The demand for increased strength on these sides arising from the absence of semi-domes has been met (1) by limiting the span of the supporting arches; (2) by giving them a depth of nearly 16 ft.; (3) by forming the curve for a considerable height from the springing with horizontal courses, thus still further reducing their span; and (4) by filling them in from the springing line, with clerestory walls, 4 ft. thick, resting on the arcades.

It should be mentioned that these walls are flush with the inner face of the supporting vaults, thereby concealing the awkward line of the arches inside, and leaving about 12 ft. of the soffit exposed on the outside; but Messrs. Lethaby and Swainson, in their fascinating account of the building, have ventured the plausible hypothesis that the enclosing wall was originally placed further back, on the plane of the outer face of the vaults, whereby a gallery would be left inside the church. This *may* have been so, yet, granting the waste of space lamented by M. Choisy, we can hardly regret it, in view of the peculiar charm afforded by the restraining character of the enclosing walls, in relation to the never-ending wonder of the vaulting.

The circle developed by the pendentives is at the height of 135 ft. from the floor, and has a diameter of 103 ft. On the top is laid a wide course of stone, with a projecting cornice; this gives a firm and even bed for the dome, the inner face of which is set back from the edge of the circle about 2 ft.; by this arrangement the pendentives are somewhat relieved and a gallery is provided, "on which the man who cared for the sacred lights could walk fearlessly and trim each in turn."

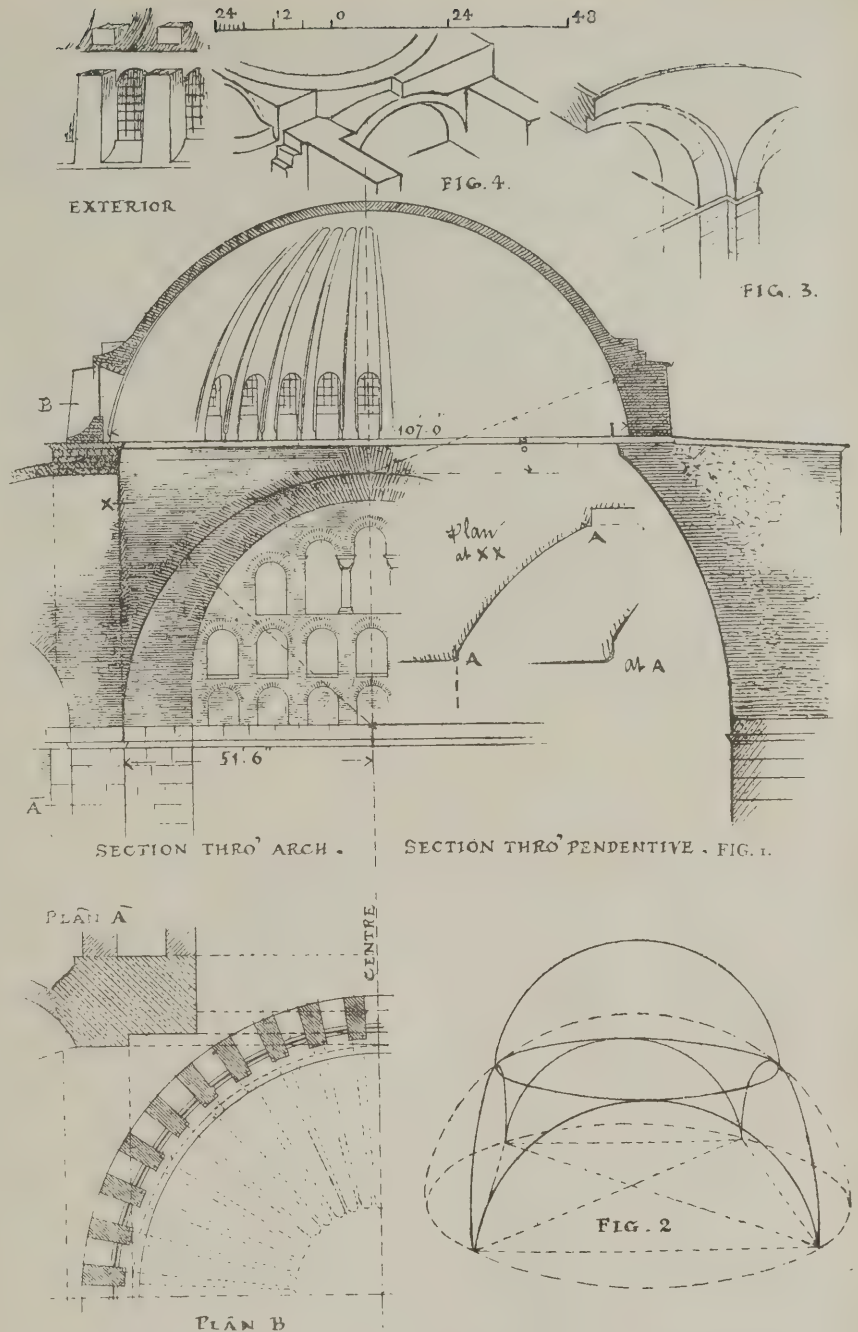
The primary motive of the selection, for the dome, of a segmental rather than a semicircular section was probably the desire to limit its weight. But, in addition to this, by springing the dome more gradually from the pendentives, the pleasing effect of the interior is no doubt improved. The internal diameter is 107 ft., and the clear height from the springing 47 ft.

Resting on the circular bed of stone before mentioned are forty piers, 9 ft. 6 in. deep and 3 ft. 6 in. wide, spaced regularly all round the circumference. The intermediate spaces are arched over, at the height of about 16 ft., to receive the remaining portion of the dome, the shell of which is gradually reduced in thickness to 2 ft. at the crown.

The brilliant idea of piercing through the abutment, while virtually maintaining its continuity, and thus providing a range of windows at the base, appears in Sta. Sophia not only fully developed but as the earliest known instance of its kind, and though lacking the simple grandeur of the solitary eye of the Pantheon, yet, as a method of lighting, it is decidedly superior; it must also contribute in no small degree to that appearance of buoyancy for which the structure is said to be remarkable.

The ribs, with a slight projection on the inner face of the dome, in no way affect the homogeneity, to which quality may doubtless be attributed the extension of the fractures by which the structure has at various times been imperilled.

The materials employed in the construction are well-burned bricks, 2 in. thick, with mortar joints of nearly the same thickness; in the lower part of the dome the bricks are about 27 in. square; at the crown they are 2 ft. square. The joints do not radiate from the centre, but have a much flatter inclination, an expedient which



THE DOME OF STA. SOPHIA, CONSTANTINOPLE: DETAILS OF ITS CONSTRUCTION.

would make it possible to carry up most of the work without continuous centering. This method was also adopted for the supporting arches. The curved face of the pendentives is corbelled over in brick, but the cavity behind is filled in with a light stalactical material, used in its natural state, without any preparation.

In turning the pendentives and the dome, it is probable that a method still practised in the East was resorted to. A pole, equal in length to the radius of the proposed hemisphere, is so attached to a central post that it can be swung in any direction, and thus made to describe the curves at every course of their height. The whole of the exterior of the dome is covered with lead, which serves as an effectual protection to the magnificent mosaic of the interior.

It is worthy of note that generally throughout the building, the supporting arches are merged as much as possible into the vaulting by forming a skewback all round the arch, either close to the soffit or only a few inches above it, as in the pendentives of the dome, and the external angles are always rounded, to turn the tesserae of the mosaic. In this way all

harsh lines are obliterated, the vast expense appearing to be covered with a continuous, yet undulating, tissue of gold.

It must be obvious that in a pendentive dome, a matter of the first importance is the limitation of its weight, and towards this end every available expedient, short of the omission of the crown, seems to have been resorted to in Sta. Sophia; the segmental form, the tenuity of the shell, the method of lighting, even the material employed, all contribute to that object. Still, the fact remains unaffected that the stability of a dome elevated on pendentives and arches of wide span can be effectually secured only by an extensive system of abutment applied to the substructure.

In the Pantheon the supporting wall has mass sufficient to withstand both the vertical and the horizontal pressure. But the Byzantine builders, wholly dispensing with walls under the dome, and extending the building on all sides, left only the four piers to sustain the vertical pressure, while for resistance to the horizontal thrust they relied on the walls and vaulting of the surrounding buildings. Thus in Sta. Sophia the thrust of the immense arches on the



STA. SOPHIA, CONSTANTINOPLE: A CAPITAL.

north and south is fully withstood by the semi-domical extensions; while to meet the enormous thrust of those on the east and west huge buttresses are raised against the piers, whence they extend across the aisles and galleries to the outermost walls of the building, a distance of 50 ft. These seeming obstructions, which are carried up their full projection nearly to the level of the platform surrounding the dome, are built hollow and pierced with wide vaulted openings on the level of each floor, thus preserving the continuity of the aisles and galleries. M. Choisy has shown that these buttresses and the square platform now surrounding the dome were at one time much lower on the north and south, so that the curve of the dome protruded beyond the platform, and the extrados of the supporting arches was exposed. The buttresses and filling-in over the arches were raised to the present level to render the abutment more nearly equal to that on the east and west. (Fig. 4.) Had the idea of the Greek cross been carried out in its entirety, and semi-domes raised on all the four sides, the statical properties of the structure would have been perfect, and all necessity for the clumsy expedients resorted to precluded. Yet, even as it is, the Church of Sta. Sophia is a remarkable instance of the skilful production, from the slenderest materials, of the grandest architectural effects and of perhaps the finest combination of domical vaulting the world has ever seen.

DERWENT VALLEY WATERWORKS.

Some Details of Construction.

At a meeting of the Surveyors' Institution held at Buckingham, Mr. Bernard Everard read a paper on "The Works of the Derwent Valley Water Board." He said that the watershed utilised formed part of the Peak District, and for the most part was moorland, comprising an area of nearly 32,000 acres. All of this area lay at a greater altitude than 580 ft. above Ordnance datum—26,800 acres above 1,000 ft., and 11,600 acres above 1,500 ft. When the present works were completed there would be practically no houses left above those reservoirs which would supply the towns. Geologically, the valleys were

in the Yoredale series of shales and sandstones, many of the hills being capped by mill-stone grits. The water was decidedly soft, only about two or three degrees of hardness.

The Howden and Derwent reservoirs, now nearing completion, were together expected to yield about twenty million gallons a day—13 1-3 million gallons for supply and 6 2-3 million gallons for compensation water. The total storage capacity of the two reservoirs would be 3,940 million gallons, and the area of the watershed draining to them 13,220 acres. There was a good deal of discussion as to whether the dams should be constructed of masonry or should be earthen embankments, and the question of stability in case of landslips, of which a number of ancient traces were found in the district, had to be considered. Masonry was finally decided upon. Work on the Howden Dam was started in November, 1901. The excavation in the centre of the valley was taken 70 ft. below the bed of the river, but even at this depth the ground was not sufficiently watertight, the beds of shale and sandstone being crushed and contorted. It was therefore decided to excavate a narrow trench 6 ft. wide until a watertight stratum was reached. This trench, which had to be taken right across the valley for a further depth of 55 ft. below the main foundation, was afterwards filled with cement concrete, and formed a watertight curtain wall below the dam. In 1908 a doubt had arisen whether the hillsides were watertight; consequently headings were driven, and on both sides of the valley broken beds of shales were met. Wing walls had therefore to be built extending 3,000 ft. on each side of the reservoir. These wing walls were constructed up the valley, not in line with the main dam. Wing walls were also necessary in the case of the Derwent Dam, but in this case it was thought better to carry them straight into the hillsides, and this was done for a distance of 500 ft. at each end. A curtain wall was also constructed below the main foundations of the dam. The interior of each dam was composed of Cyclopean rubble, large rough blocks of stone surrounded by cement concrete, in the proportion of about 45 per cent. of stone to 55 of concrete. The

dams were faced on each side with dressed stone, and the joints on the upstream face were caulked with neat cement.

The water was conveyed through an aqueduct from the Derwent reservoir to the filter beds at Bamford, the Sheffield supply being taken off by means of a tunnel through the hills, from a point just south of the Lady Bower Brook. The water, after passing through the filters, flowed some twenty miles to a service reservoir at Ambergate. This reservoir regulated the supply to the towns if for any reason the line to the north was interfered with. It was covered, and would be divided into three parts, only one of which was now being constructed, work on the other two being deferred until they were likely to be required. The portion now under construction would contain 28,000,000 gallons. The walls and floor were built of concrete, faced with asphalt, and the roof of concrete and steel girders supported by brick piers. The top water level, which regulated the pressure on the supply mains, was 640 ft. above sea level. The main aqueduct consisted of tunnel, cut and cover, and pipes. The tunnels and cut and cover, which were made large enough to take the whole ultimate available supply, were formed of concrete with a lining of blue bricks, circular in section, having a diameter of 6 ft. 3 in. The pipes, of cast iron, were 45 in. in diameter, and were used where the aqueduct came under pressure in crossing valleys and low ground. Easements had been acquired for laying three lines of pipes, but only one line was now constructed to convey the first instalment from the Howden and Derwent reservoirs.

The Board's works terminated at Langley Mill, and thence the Nottingham Corporation had constructed their own pipe line to their reservoir at Cockpit Hill. The Corporations of Derby and Leicester had a joint main 40 in. in diameter as far as Coxbench, within four miles of Derby. At this point a branch main conveyed Derby's share of the water to their reservoir at Little Eaton. The aqueduct constructed by the Board—now reduced to 33 in.—continued south to a point just north of the River Trent, near Sawley.

The author said that the portion of the works carried out for the Corporation of Leicester had been constructed under the supervision of his firm. The Leicester aqueduct, commencing near Sawley, crossed over the River Trent and passed south of the west of Loughborough and through Beaumanor Park to Hallgates, a distance of about fourteen miles. The pipes were for the most part 32 in. in diameter. At Hallgates, a service reservoir to hold 2,000,000 gallons existed for the present supply to the town, and another reservoir of equal capacity had now been made. He believed that the line of pipes from Ambergate to Hallgates was the longest "siphon" in England, being 29½ miles. The length of aqueduct from Derwent to Leicester was about sixty-seven miles. Through the valley of the Trent two lines of pipes had been laid, although one was sufficient to convey Leicester's share of the first instalment. Owing, however, to the high pressure on the mains, which reached 240 lb. per sq. in., to the fact that the gravels were there always saturated to within 3 ft. of the surface, and to the difficulties of access during periodical floods, this course was considered necessary in order to safeguard a continuous supply.

The most interesting work on the Leicester section, and possibly along the whole line of aqueduct, was the bridge which

carried the pipes over the River Trent. This bridge, which was built of steel, was of the bow-string type, and crossed the river in one clear span of 220 ft. at a height of 17 ft. above the ordinary water level. It was designed to carry four lines of steel mains, two for immediate use, and two for future requirements. The superstructure was carried upon brick and concrete foundations enclosed in cast-iron cylinders, which were first sunk by the aid of compressed air to the solid marl, at a depth of 21 ft. or 22 ft. below the river level. Started in the summer of 1906, it took some fifteen months to erect, and cost nearly £9,000.

In conclusion the author mentioned that the works of the Board were estimated to cost about £6,000,000, and if to this were added the other works carried out by the four corporations the total expenditure would be £7,100,000.

BUILDING INTERESTS IN SOUTH AFRICA.

(Specially written by our South African Correspondent.)

JOHANNESBURG, May 6th.

National Federation Congress.

In fulfilment of my promise I may now be allowed to devote some space to the important Congress of the National Federation of Building Trade Employers in South Africa. It was the eighth annual conference, and was endowed with both an historic and a business interest. In point of fact, it was an anniversary meeting after a lapse of seven years in the very hall in which the inaugural congress had been held. In this cycle of time there has been undreamt-of and unparalleled progress, and there has been, also, one consistent and well-directed effort to maintain the high status and prestige of the Federation.

New Constitution.

The corporate life of the Federation has undergone a process of evolution towards a more completely fused condition, and the adoption of the new constitution must mean a more perfect readjustment of its organising powers and influence. The main lines and general principles of the Federation will still be followed, but the administration will be greatly strengthened, and it will be better armed with all the vital essentials to meet any emergency with which the Federation may be confronted in the future. One never knows when labour troubles may arise. In South Africa, as elsewhere, sometimes the workman's fancy lightly turns to thoughts of strikes, and it is well to be prepared to meet unjust demands for reduction of hours and revision of wages.

An Extended Agenda.

Naturally, a country which has spent close upon £10,000,000 in buildings in the course of four years affords abundant scope for earnest reflection on industrial subjects associated with the trade. Congress this year, therefore, was provided with a somewhat extended agenda; in fact, there were no fewer than twenty-nine items down for attention. Some of these, of course, were of the hardy annual type, but others touched untrodden ground, and were of much public as well as trade interest.

Indenture of Apprenticeship.

Amongst the first subjects was the important one of indenturing apprentices. This is a subject that should be taken in hand by all Chambers of Commerce and other commercial and industrial associations in the country. Boys here, with their love of play and sport, are apt to

think it beneath their dignity to learn a trade of any kind; as, however, every civilised country is striving for industrial expansion to increase its capital and provide profitable employment for its people, boys everywhere should be encouraged to adopt a trade career. It is certainly gratifying to know that technical schools throughout the country are doing much to foster this aim.

Industries Commission.

The report of the Industries Commission rightly was subjected to adverse criticism, as a most unsatisfactory document, that even the Government is ashamed of. The whole subject of industries will be dealt with soon at a well-organised Congress of Manufacturers and men engaged in all kinds of trade and commerce.

Conditions of Contract.

The Federation keeps on striving for uniformity in conditions of contract throughout the Union. That this will ultimately be brought about seems within the range of possibility. The matter is no doubt one of great difficulty in South Africa, but this is also the case in other and older countries, where builders are found pegging away year after year for the much-longed-for desideratum of a set of conditions of contract as nearly perfect as is attainable in the varying circumstances.

Afforestation.

In looking over the report, I am glad to see that the Port Elizabeth Master Builders' Association have taken up the question of afforestation in South Africa. The remarks made should be well weighed by the Government, as they are of national and commercial importance, especially with reference to timber required for the building and manufacturing trades, and the increasing scarcity of suitable timber from the foreign markets.

Coloured Skilled Labour.

Another subject on the agenda that calls for passing reference is that of coloured skilled labour. The Federation have kept this subject before them during the past year, but Ministers are slow to act, and very little progress has been made. It is a subject, however, of such importance to the building trade that it cannot be allowed to be kept in the background, and for that reason it was well that it was at least referred to.

Builders Visiting Europe.

Quite a number of South African master builders are visiting Europe this year, and several have already left. As the National Federation here is affiliated to the National Federation of Building Trades Employers of Great Britain and Ireland, it is to be expected that they will take advantage of the opportunity to be present at the summer meetings in Nottingham in July.

PROJECTED INTERNATIONAL BUILDING EXHIBITION, LEIPZIG.

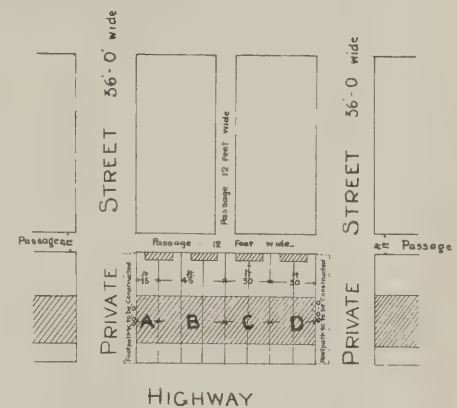
An international building trades exhibition is arranged to take place at Leipzig from May to October, 1913. The classification of the exhibits is as follows: Division I.: Architecture, eight groups—comprising town-planning, roads and bridges, underground constructions, interior planning, industrial art, furniture, architectural painting and sculpture, gardens and parks, cemeteries and funerary art, construction and maintenance of monuments, protection of scenery and objects of interest. Division II.: Not yet arranged. Division III.: Materials of construction, their manufacture and appli-

cation, twenty groups—comprising stone, wood, ceramics, artificial stone, mosaic, concrete and reinforced concrete, facings, isolating materials, metallurgy, glass, installations, heating, lighting, electricity, wall-coverings, house-painting. Division IV.: Machines, utensils, and appliances used in building, eight groups. Division V.: Not yet announced. Division VI.: Hygiene of dwellings, fabrics, and streets, protection of workers, welfare of workers, protection against fire, ventilation, disinfection, baths, cleansing, etc., six groups. Division VII.: Not announced. Division VIII.: Testing of materials of construction, technical demonstrations. The offices of the exhibition are at Leipzig, Gottsched-strasse, 22.

ENQUIRIES ANSWERED.

New Footpaths, etc.: Apportionment of Cost.

REGENT writes: "An urban authority resolved to apportion the expenses of private street works under the whole of the powers contained in Section 10 of the Private Street Works Act, 1892. If the foot-



paths, etc., alongside the gables of houses owned by A and D were constructed (see sketch), what would be a reasonable proportion of the cost of the work to charge against owners of property B and C?"

—There is no doubt as to the legal power of the sanitary authority to charge the owners B and C with an equitable portion of the cost of making up the footpaths flanking the properties of A and D, and it is a question of fact for the justices to determine what proportion is rightly chargeable to those owners. Personally I am of opinion that the benefits to the houses of B and C from this particular part of the works are so slight that they would be well advised to resist any charge save of a very nominal character. F. S. I.

Question of Building Line.

SUBSCRIBERS write: "We have deposited with the local Council plans for a house and shop to be erected on a corner site. In one road the proposed structure would be level with the building line of the adjoining properties; but as regards the return front, we consider that we are entitled to build to a line drawn between the property on the other side of the cross road and a building immediately in our rear, thus gaining an advantage of four extra feet. The Council, however, require us to set back the building on this return frontage to the building line of the house in the rear, namely, to a distance of 8 ft. Are we legally compelled to do this?"

—This enquiry raises the very nice legal point as to whether the words of the Acts,

"in the same street," can apply to a street intervening in a cross direction. I do not think such a case has yet been decided. I advise that you accede to the Council's request and set back the whole of your new building 8 ft. X.

Validity of Tenant's Notice.

W. H. E. writes: "A three years' tenancy agreement is terminable on September 29th next by either party giving six months' notice. Are calendar months or lunar months implied? Would a notice dated March 29th last, but posted at 9.45 p.m. on the following day and received on April 1st, be valid and in order?"—Calendar months are implied by such a proviso. I am of opinion that your notice is bad, because the full 183 days' notice has not been given, but it is a matter which admits of some argument and it is to be regretted that the tenant has put himself in such an equivocal position. I advise the parties to agree between themselves as to what should be done. F. S. I.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

"Mystic Board of Trade Returns."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your issue for May 29th, Mr. J. H. Kerner-Greenwood says that foreigners send their goods to England and then tranship them to our colonies as English-made goods in order to gain the preferential tariff given on English-made goods. But, now, have not all foreign-made goods sent to England to have printed clearly on each individual parcel the name of the country in which they were produced? Therefore, where will the Custom House officers in our Colonies be to pass goods sent from England, mind you, but with the name of the foreign country in which they were produced printed clearly on them outside, as English-made goods, and thus give them the preferential tariff. I think they will not quite do this. I hope that Mr. J. H. Kerner-Greenwood will kindly reply to this.

W. S. N.

[It does not seem necessary to trouble Mr. Kerner-Greenwood for a reply, the means of overcoming the assumed difficulty being so very obvious.—Ed.]

A BUILDER'S AFFAIRS.

Before Mr. Registrar Brougham, on Friday last, the public examination was held of Mr. James Fryer, who had carried on business as a speculative builder, at 110, Strand, W.C., under the style of Pink, Fryer, and Co., and was adjudged bankrupt on May 11th. The statement of affairs showed gross liabilities £83,313, of which £10,496 was expected to rank for dividend, and assets valued at £7,286.

A balance-sheet prepared in June, 1906, showed that he then had a balance of capital in his favour amounting to £29,000. During 1909 and 1910 he built offices and shops in Bedford Row and a hotel over the Piccadilly Electric Railway Station, and he expected the latter to produce a surplus of £4,000, which would become available for his creditors. He attributed his insolvency to the depreciation of house property in London and inability to dispose of his buildings at Hampstead.

The examination was ordered to be concluded.

COMPETITIONS.

New Council Offices, Portland.

Eighty-seven designs have been submitted for this building, which is to cost between £3,500 and £4,000.

The first premium (£50) has been awarded to Messrs. Spier and Bevan, of Cardiff, and the second (£10) to Mr. Ernest E. Fetch, of London.

LIST OF COMPETITIONS OPEN.

JUNE 24. KING EDWARD WELSH NATIONAL MEMORIAL.—Sketches for two sanatoria, one in North Wales, 150 beds, the other in South Wales, 250 beds. On preliminary sketches, not more than six architects will be selected to send full plans and details. Particulars from Secretary Welsh National Memorial Offices, Newtown, Montgomeryshire.

JUNE 26. BATHS, BIRMINGHAM.—Twenty guineas for second, ten guineas for third design. Apply, Superintendent Engineer, Kent Street, Birmingham.

JUNE 28. TOWN PLANNING, HALE.—Premiums of £50 and £25 are offered for a town-planning scheme. Address, Council Offices, Hale, Cheshire.

JUNE 29. ESTATE DEVELOPMENT, REIGATE.—Premiums of 30 guineas and 10 guineas are offered for schemes for the laying-out and development of Reigate Lodge Estate. Address, the Town Clerk, Reigate.

JUNE 30. TOWN HALL, ETC., PADIHAM.—Premiums of £40 and £20 are offered for designs for town hall, baths, etc. Particulars, Mr. J. Gregson, A.M.Inst.C.E., Surveyor's Office, Padiham. [See communication from R.I.B.A. Secretary, in our issue of May 15th, p. 508.]

JULY 1. NEW OFFICES FOR THE PORT OF LONDON.—Limited to the six architects selected in the preliminary competition. [See our issue of April 10th, p. 370.]

JULY 5. ADDITIONS TO HOSPITAL, CONISBROUGH.—Doncaster and Mexborough Joint Hospital Board invite competitive designs (in sepia or Indian ink) for additions to their isolation hospital. Apply, H. M. Marshall, Clerk to the Board, Union Offices, High Street, Doncaster. [The time has been extended from that formerly announced.]

AUGUST 6. FIRE BRIGADE STATION, CARDIFF.—Cardiff Corporation invite architects to submit designs and estimates in competition for a fire brigade station proposed to be erected in Westgate Street, Cardiff. The Corporation have appointed Mr. A. Marshall MacKenzie, A.R.S.A., F.R.I.B.A., to act as assessor. Particulars on deposit of two guineas (returnable) from J. L. Wheatley, Town Clerk, City Hall, Cardiff.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace-road.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by cheque for two guineas (returnable) to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

THE RESTORATION OF TATTERSHALL CASTLE.

What Lord Curzon Proposes to Do.

On the occasion, on Wednesday last, of the historic fireplaces being restored to Tattershall Castle, Lord Curzon of Kedleston (who has been mainly instrumental in saving them) spoke of his plans of restoring the Castle. Seven months ago, he said, he recovered the building. He had less than twenty-four hours to do it. He came down by the morning train, saw the place, and by five o'clock that afternoon he sent a telegram to say that he would buy the Castle to recover it for the nation. The fireplaces had gone, and the fear was that they would be taken out of this country and sold in America. That would almost have been a national scandal. It was then that he decided to attempt to recover the fireplaces, and he acknowledged a great debt of gratitude to many rich and cultivated men who helped him in that task. He could not have undertaken it himself, having already undertaken the responsibility for the Castle, but Mr. Shuttleworth and Captain Weigall, their member of Parliament, and other friends of his, interested either in that place or in antiquities, helped him.

Lord Curzon went on to describe what was proposed to be done both with the fireplaces and with the Castle. He said that under the direction of Mr. Weis, than whom no man living in England was more competent to do justice to the task, they were excavating the whole of the Castle area in order to discover as far as possible what was there before. While the keep was almost the only structure that remained, it was only part of the ancient Castle, and all about the inner walls were buildings of various descriptions constituting one of the greatest mansions in that part of England. They knew from records that Lord Cromwell, who built that place, rode abroad with 120 men and lived in that Castle with 100 personal retainers. That meant that he was surrounded with great circumstance of pomp and position, and one of their first objects was to ascertain as far as possible what lay on the space of ground on which they stood, not with a view of restoring it—he did not propose to rebuild that which was gone—but with a view of discovering the conditions of life in those days. But there were certain things he would restore, and first and foremost were the moats. There were relics of the old inner moat surrounding the Castle. He hoped to restore both the inner moat and the outer one, which ran outside and was an additional protection, and he proposed to restore, for everybody to see, a picture of this great fortified mansion as it was 445 years ago. The works would occupy certainly a year, and perhaps longer. With regard to the fabric itself, they would first fix a lightning conductor, so that the Castle should not be struck by lightning again. Then they would begin from the roofs and restore the whole interior of the Castle, putting in four floors. Then the mantelpieces would be placed in their niches, the mullions and traceries of the windows put back, and glass put in, and though he would not hope to live there himself, for to tell the truth life under those conditions was somewhat uncomfortable, yet the Castle would be there for anyone to see, and it would be a type and memorial of the sort of conditions under which great noblemen once lived.

Lord Curzon of Kedleston, and those whose hearty co-operation he so generously acknowledges, are to be heartily congratulated on the happy issue of their prompt and patriotic action.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 19th, 1912.

Volume XXXV.

No. 909.



LODGE AT "CHEWTON GLEN," CHRISTCHURCH, HAMPSHIRE. PERCY E. NEWTON, ARCHITECT.

This lodge was built on the site of an old cottage, and the entrance gates were set back on account of a dangerous curve in the road.
The total cost was £360, the client employing his own workmen.



THE LITTLE THEATRE, WEST FORTY-FOURTH STREET, NEW YORK: DETAIL OF ENTRANCE.
INGALLS AND HOFFMAN, ASSOCIATED ARCHITECTS.

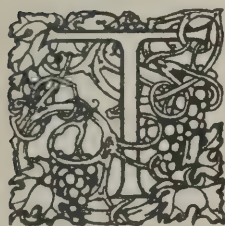
THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 19th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 909.

Elementary School Planning.



HE principal requirements in the construction of elementary schools may be grouped under headings of site, arrangement of plan for convenient working, lighting and ventilation, sanitary provisions, and economy of cost. The small book on the subject by Mr. Philip A. Robson* does not actually group the requirements

under this precise division, but all the requisites of elementary school building may be referred to one or other of those headings. Mr. Robson's book, which is very concise, and wastes no space either in matter or illustrations, seems to aim at summing up in a practical manner the present position of the subject. Although the subject of "Training Colleges" is placed first in the title, the plans and the text are much more largely concerned with elementary schools, which form, in fact, the most important and difficult part of the subject, as they are much more numerous than training colleges, and they present a more difficult problem of combining efficiency with economy of space and construction. A training college is a type of building admitting of more variety of plan, and in which there is generally less demand for economy of cost. But the elementary school is a special type under special conditions.

The book is rather fragmentary in arrangement. Its main feature is a reprint of a lecture by the author on the hygienic planning of schools, delivered at meetings of the Royal Institute of Public Health; then comes a chapter on "Recent Elementary Schools in Derbyshire," by Mr. Widdows, the architect to the Derbyshire Education Committee; and after this, remarks on higher elementary, secondary, and technical schools, followed by the author's notes on the Report of the Departmental Committee on the cost of elementary school buildings. The remainder of the volume is made up of a large number of illustrations, including plans of elementary and other schools, and photographs of some exteriors of school buildings and of some of the rooms fitted with special appliances in technical schools. Photographs of this last kind, however, are not of much practical use; plans and sections of the special furniture are much better. The plans of Derbyshire schools are, of course, those of Mr. Widdows. For the rest we are left in doubt as to whom to attribute the plans, except that one or two are named as by the author. We may also observe that a good many of the plans have no north point given, although aspect is of the greatest importance in school planning.

We may say a word first as to the contribution of the Derbyshire school architect, Mr. Widdows, one of whose plans, "A Derbyshire Elementary School," we reproduce (Fig. 1), as these plans are all on the system of cross-lighting which Mr. Widdows upholds. There may be something to be said for it, though so far as cross-ventilation is concerned, that may be obtained without cross

lighting, which in the main is not advantageous; it necessarily puts some of the pupils with a right-hand light. With his cross-lighting Mr. Widdows is naturally somewhat indifferent as to aspect. As he says, rooms lighted on both sides are sure to get sunlight for some part of the day; consequently one is not surprised to find that none of his plans are decorated with a north point, and that in his secondary school plan he employs the four-armed radiating plan, with the hall in the centre (in this case a north point is given, some of the classrooms being lighted only on one side). This radiating plan is very convenient for economising corridor traffic and inspection, but it has no other recommendation. It was once supposed to be the type of plan for prisons and lunatic asylums, but experience soon led to its disuse. There are some good practical suggestions in his paper, however. Fig. 1 shows how a central corridor of communication may be made wide enough to act practically as a central hall, with doors into open verandahs, which ensure adequate ventilation when required; and he describes and illustrates another scheme of plan, in which the classroom doors open on to covered verandahs, so that the classrooms open really into the outer air, the floors to be a step up, and the door to be outside the step and to shut against it, so as to preclude draught underneath the door, a provision which shows an eye to actual facts of working. His method for avoiding the freezing of the w.c. supply cisterns in winter, by placing them all within a warmed central passage (Fig. 2), into which also the traps of the closets discharge, is ingenious, and ought to be practically efficient. We may also note with approval his remark that "cupboards are worked in as part of the structure, and cumbersome pieces of ugly furniture are avoided

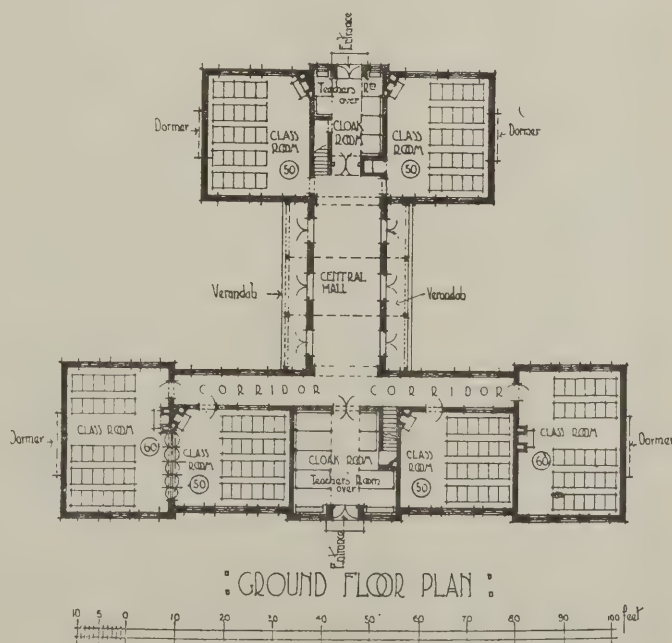


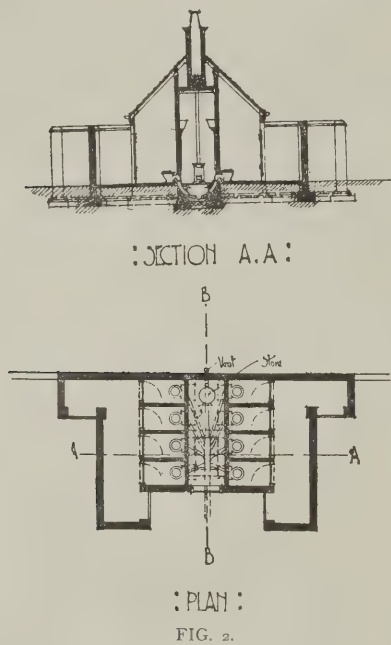
FIG. 1.

A DERBYSHIRE ELEMENTARY SCHOOL.

* School-Planning; being a practical treatise on the Planning of British Training Colleges and Schools. By Philip A. Robson, A.R.I.B.A. London: Nicholson-Smith; 1911. Price 15s.

thereby." They need not necessarily be "ugly," but structural cupboards arranged in convenient recesses are much better than loose furniture for the placing of which no special provision has been made.

To return to the author's preliminary lecture, which is the real kernel of the book, all the remarks about the conditions of site for a school are excellent, and should be carefully studied, and we may specially emphasise the recommendation that before a site is purchased the opinion of an experienced school architect should be taken. He may see fatal objections to the proposed site which have not occurred to the intending purchasers, who may thus be saved from an injudicious expenditure at the outset. In regard to staircases, it is pointed out that if the building is a long one the staircases should not be at the extreme ends; also that "external iron staircases, which are very rarely used or tested, will prove to be



DERBYSHIRE TYPE OF CONVENIENCES.

sources of accidents, and in the case of day-schools they indicate bad planning. If considered necessary, then another staircase should have been built in the first instance."

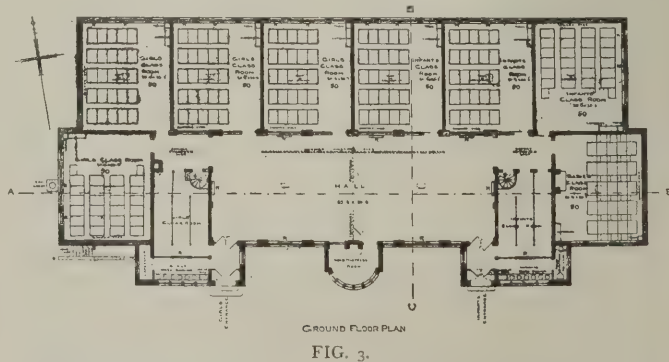
In regard to classrooms, the author says that (as is usually admitted) left-hand light is "important," and if this is impossible, right-hand light is the next best. It is, but it is a very bad second to left-hand light, and we should be inclined to put it more strongly, and say that left-hand light is indispensable. If it cannot be arranged for, then the plan is bad to begin with in its general layout. In the upper of the two plans for "an elementary school in three departments," given on page 50 of the book, the position of teacher and class should have been reversed on one side of the plan, so as to get left-hand light on both sides; owing to neglect of this, the classrooms on one side get left-hand light, while those on the other side have to put up with right-hand light. There seems to be no reason why the positions should not have been reversed in order to avoid this defect. In regard to the aspect of classrooms we cannot quite agree with the recommendations made, which are hardly decisive enough. The author recommends that where there is a central hall its longer axis should run north and south; "this will allow the classrooms, placed on two or three sides of it, to get the sun during some part of the day, with their windows facing south, south-east, and south-west." Now, we consider that for a classroom south is as bad a light as it is for a painter's studio or an architect's drawing office. It is all very well in winter, perhaps, but at other seasons of the year a south aspect means constant trouble with the sunshine; permanent heat and discomfort when there is steady sunshine, and still more trouble on those days, frequent in this climate,

when there is bright sunshine frequently veiled by passing clouds, producing a constant irritating change from too much light to too little, or what appears to be too little by contrast. It is all very well to say that health depends on plenty of sun; so in a sense it does; but no one wants to work in bright sunshine. East, with perhaps a little south in it, is the best classroom aspect; then the room gets warmed by the sunlight in the early morning, and the direct sun is off it when lessons begin; and west is the next best, for lesson time is generally over before the rays of the western summer sun become inconvenient.

The question of the central hall is, as the author says, a rather troublesome one. It appears that in Germany and in America daily assembly of the whole school is not the general rule; in England it is. In the two countries just named the central hall, therefore, has not the importance that it has with us; it is often relegated to the top floor. In England it is necessary that it should be of easy access from the classrooms. To have the latter opening directly out of the central hall is an economy of space and walling, but with the drawback that it is noisy if the hall is used for exercise or drill for part of the classes, while others are occupied in the classrooms. Some heads of schools prefer it, as rendering the school as a whole very easy to keep under inspection; but in general we should say that it is better to have it separated from the classrooms by a corridor.

In regard to cloakrooms the author lays down that they should never be passage-ways to the school-rooms or classrooms, but should be entered from a corridor. The "never" is perhaps too emphatic; there does not seem to be any absolute reason why they should not; in a confined site it makes for compact and economical planning, as seen in the plan of Fig. 1. But though it is better to have a separate corridor of access, it is necessary that, in one sense, the cloakroom should always be a passage, i.e., it should be planned with an entrance at one end and an exit at the other end, so that the pupils who have deposited their cloaks or coats should go straight on to the exit at the other end, and not be jostling others by a return to the entrance door. The author expresses this opinion emphatically in the text, but he has not carried it out in his own plan of the St. George's, Hanover Square, Schools, where the cloakroom certainly has two doors, but they are both at the same end—both, in fact, being entrance doors. The children may, it is true, enter by one door, go round the end of the central screen, and come up the other side of it to the other door; but will they do so? The cloakrooms should be so planned that entrance at one end and exit at the other is the obvious and necessary course, and can hardly be avoided: otherwise there will be confusion.

We give as Fig. 3 what seems to be one of the best plans in the book, that on page 63 for "an elementary school for 200 girls and 200 infants on one floor." The classrooms all have left-hand light; it would have been preferable if the majority of the classrooms had not been quite so much due north in aspect, though that is a great



ELEMENTARY SCHOOL FOR 200 GIRLS AND 200 INFANTS
ON ONE FLOOR.



FIG. 4.

ST. GEORGE'S SCHOOLS (HIGHER GRADE), HANOVER SQUARE
PHILIP A. ROBSON, A.R.I.B.A., ARCHITECT.

deal better than due south, except for the babies' classroom, the only one which has that light, and the only one in which it is suitable, for the babies are engaged in regulated play rather than work, and for that sunlight is no disadvantage. The head mistress has a cheerful bay-windowed room facing south. The cloak-rooms, and the method of access and egress from them, are very well planned. In this case the classrooms open directly out of the hall; in the case of a school for girls and infants only there is less objection to this, as they are not so noisy as boys.

Mr. Robson concludes his lecture or essay by the observation, in which we heartily concur, that the ideal school should have a beauty and order of appearance—a "eurythmy," as Vitruvius calls it (only the author spells it "eurythmy," which is surely incorrect); "to build schools like glaciers in angularity and eccentricity, or resembling barracks in their barrenness, is to deprive the children of what may rightly be called their birth-right of beauty." That is the great fault of the French *lycée* buildings, which, with their cast-iron type of architecture, look like education-mills, and perhaps only too closely symbolise the methods of instruction carried on in them. A school, especially for the very young, should have something home-like about it. In connection with this point we give, as Fig. 4, the exterior view of the author's St. George's Schools, a building which fairly answers this ideal, and is certainly far more attractive than the French type of school architecture.

We observe that the author more than once takes the opportunity of having a dig at the plenum system of ventilation, and at mechanical ventilation generally. We quite agree with him that it is a mistake to train children to think that fresh air is disadvantageous, and that windows must be kept shut, a lesson which all the children of the poorer classes are certain to learn at home, for everyone who has had any experience in visiting homes of that class must have observed how difficult it is to persuade the inhabitants to open their windows; and domestic servants, who come mostly from the same class, are just as bad. But when the author speaks of those who want plenum ventilation as "fad-dists," he is going a great deal too far. It is impossible to keep the air changed as often as it ought to be, in large schools, without mechanical ventilation. We have a very distinct recollection (though we cannot now give chapter and verse for it) of a published series of experiments made a good many years ago in Scotland, in which the state of the air of a large schoolroom was scientifically tested after so many hours of occupation under "natural ventilation," and after the same number of hours of mechanical ventilation; commencing in each case with the state of the air before the room was occupied. The statistics were such as should have convinced

the most sceptical that in the matter of keeping the air of a room free from impurities the natural ventilation was almost nowhere, so to speak, in comparison with the cleansing effect of mechanical ventilation. The latter is expensive, no doubt; but except in the case of small schools the result will be found to be worth the expenditure.

Architects and Furniture.

A TOO characteristic discussion took place the other day at the Middlesex County Council, on the occasion of a recommendation from the County Buildings Committee that Mr. J. S. Gibson, the architect for the new County Hall, should also be commissioned to design the furniture and fittings, and to superintend its construction, at a fee of $7\frac{1}{2}$ per cent. on the amount expended. The fee is too small, because the work to be done is far greater in proportion than the work to be done for the usual 5 per cent. on the cost of a building. The outlay on a building includes a great deal of work, such as walls and flooring considered *en masse*, for which there is no actual designing to be done by the architect, but the cost of which all goes towards increasing his 5 per cent., so that over the whole he is fairly though not extravagantly remunerated. But in the case of furniture and fittings it is all design on the part of the architect, and for such work, unless a fixed fee were agreed upon (which would be far better), the architect would really not be adequately paid at less than 10 per cent. on the outlay. Whereupon up gets a certain member of the Council and declares that it is absurd to ask an architect to design furniture, when there were eminent firms who would submit designs free of cost and make the furniture required! He was supported by two other members. What strikes one most in such discussions is the ignorance about everything that is going on in the world of art; apparent total ignorance of the fact that architects are constantly asked to design furniture; that the best modern furniture has been designed by architects, and that the method of the supply of designs by commercial firms, employing craftsmen whose names are concealed and who get no credit for their work, is at the root of all the unsatisfactory and commonplace furniture and fittings that are so frequently produced. Of questions of art in small things there is here a strange oblivion, though no subject in connection with art has been more often and more publicly discussed of late years. The Buildings Committee evidently, and very rightly, considered that their architect's building ought not to be spoiled by the introduction into it of shop furniture, which might probably be quite out of keeping with the building. Fortunately the chairman, who earnestly exhorted the Council to have confidence in the Buildings Committee and to support its decision, succeeded in getting a majority in favour of the committee's report, and the ridiculous amendment on it was not carried.

The Piccadilly Facade.

IF there were wanting a dramatic proof of the need of such a society as the London Society for preventing the architectural disfigurement of London it would be found in the terms of the letter addressed to "The Times" by Lord Plymouth and Sir Aston Webb, on behalf of the society, in regard to the piece of vandalism which appears to be in progress in Piccadilly. The Piccadilly front of the Piccadilly Hotel, designed by Mr. Norman Shaw, with its range of columns standing free in the upper storey, is one of the finest and most effective pieces of modern street architecture in the world, but it is incomplete so far, only one of the end wings which flank and support the colonnade having been built at the time, owing to some legal delay in getting possession of the property at the east end of the site. Some time ago, however, we had the disastrous news that the eastern wing, or what would take its place, was about to be rebuilt by the owners with entire disregard of Mr. Shaw's design, of which it ought to form the completion. A good deal of indignation was expressed at this, and subsequently a

rumour was spread that this intention had been abandoned, and that the wing was to be carried out in accordance with the design of the western wing. Now it appears that a building is actually in process of erection which is to ignore Mr. Shaw's design altogether, and practically, therefore, to ruin its effect, and no authority over London building seems to have the power or the will to put a stop to it. If this destruction of a great architectural design is allowed to go on, merely on commercial grounds, it is one of the most deplorable things in regard to public architecture which have ever happened even in London, and that is saying a good deal. Is any further and more authoritative step to be taken in the matter? Mere protests in "The Times" are of no use; obviously those concerned with the building care nothing about them, as they do not even take the trouble to reply or to try to make a case for themselves. How is London ever to be architecturally improved, if private owners are to be allowed to deface an important architectural design merely because it suits their convenience to do so?

The Fate of the Old G.P.O.

IT is stated that the old General Post Office buildings, St. Martin's-le-Grand, E.C., are to be entirely demolished, to make way for a new building in which certain administrative offices of the constantly expanding business under the control of the Postmaster-General are to be accommodated. Sir Robert Smirke's dignified if dirty pediment and pillars will be greatly missed, as they gave to the district a certain sedately classical character, which, however, has within recent years lost much of its impressiveness by the erection of adjacent big buildings of incongruous character. The old Post Office was erected during 1825-29, on a portion of the site once occupied by the monastery of St. Martin's-le-Grand, which was founded about the middle of the eleventh century; and it is recorded that in excavating for the Post Office buildings traces of an Early English crypt were discovered. This section of the City lost much of its distinctive character by the demolition of Christ's Hospital School, on the site of which the new General Post Office has been built of reinforced concrete, and there are those who, for the same more or less sentimental reasons, lament the earlier demolition of the Gaol of Newgate, which, though gloomy and grimy in the extreme, held the observer in a sort of horrible fascination; and hence they will have it that George Dance's building was much finer than the Sessions House, designed by the late Mr. E. W. Mountford, which has taken its place. No matter how excellent the building (and we are optimistically hoping for the best) that shall arise on the site of the old G.P.O., a full and fair appreciation of its merit may only be possible to a new generation that is undistracted by recollections of Smirke's Classic façade.

Proposed New Richmond Bridge.

THE time seems to have come when the necessity for a new bridge over the Thames at Richmond cannot be denied, and one may support it with the more ease of mind because the authorities most nearly concerned seem to have given up the idea of destroying the present bridge, and with it much of the beauty of Richmond, in order to build a wider one. Some years ago this was all the talk, and many seemed to regard the destruction of the bridge with entire equanimity. And when the subject was first discussed there was really no adequate ground for saying that the bridge was insufficient for the traffic. Its approach at the town end was no doubt always bad, but until very recent years the traffic over it was not large. It is the coming of the motor car, and more especially the motor bus, that has made the difference, and has also made the question of the approach and the gradient more serious. The approach is bad, independent of the gradient, because it is in line with no main street, but is at a sharp angle out of a street, which has itself a considerable gradient. What is now proposed is the formation of a tolerably wide road continuing the

line of Red Lion Street, and carried across the river at the point where there is the eyot called Corporation Island. As far as the road-line is concerned this seems a perfectly good scheme.

We only hope that the scenic character of that beautiful reach of the river will be fully considered, and that it will not be spoiled and defaced by the erection of a girder bridge. To place that kind of bridge there would be to entirely alter the character of the view at that point. There is every opportunity, every suggestion indeed, in the site itself, for a really picturesque and fine stone bridge, with piers on the Surrey bank and on the island and a wide arch over, and a smaller arch spanning the river from the island to the Middlesex side. Arches of different span, arising out of the configuration of the ground, add much to the picturesque character of a bridge. One has only to look at the old bridge over the Dee at Chester to see that. With such a bridge as we have indicated, and the beautiful existing bridge retained, the improvement in the road-line across the river can be made without spoiling the beauty of the Thames at Richmond, and without destroying Paine's fine bridge, which could remain; whereas, with the introduction of a girder bridge the charm of the spot would be gone.

It is foolish in these matters to shut one's eyes to obvious facts, and all reasonable persons will at once recognise that the existing bridge at Richmond is not only inadequate, but dangerous for traffic and foot-passengers. Therefore, some relief must be provided. And it is by erecting a new bridge at the foot of the Hill that this relief should be secured. It is well to bear in mind, too, that when the proposal to build a bridge across the Thames, in place of the then existing ferry, was first put forward, the intention was to take the line of route now suggested, and this scheme, the proper one, was only negated by the selfish obstinacy of a landowner on the Middlesex side who would not agree to the roadway being cut across his land.

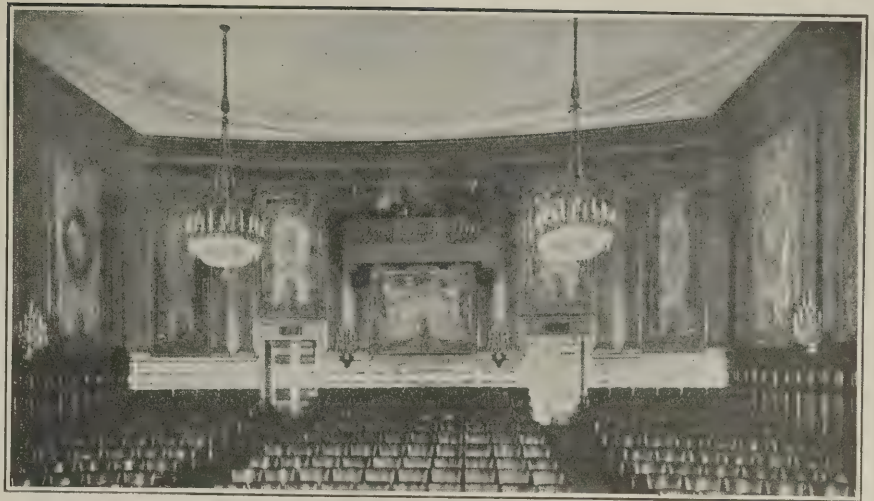
London Building Trades Agreement.

IN the comments which we have made from time to time on the demands of the London building trade workers for better conditions, we have consistently held that, so far as it was possible to foresee the upshot of the negotiations with the employers, there was always a strong probability of a peaceful settlement of the difficulty. That view, we are greatly gratified to record, has been fully justified by the event, as it was announced last Wednesday that the carpenters had decided by ballot to accept the concessions offered, and that the rest of the trades, and the labourers, would doubtless fall into line. It will be remembered that the men had asked for an increase of threehalfpence an hour. The odd—the very odd—halfpenny obviously represents what in courtesy may be termed a factor of safety, or margin of graceful concession, or compromise—the time-honoured hand-selling that seems to be indispensable to any sort of bargaining, the one side being, by the inveteracy of the custom, almost compelled to ask more than it will accept, because of the tacit assumption that it will follow an ancient custom of allowing discounts, or of providing for the higgling of the market, or that it will observe the perhaps more modern practice of giving the other side a luck-penny (or luck-halfpenny), which softens defeat and "saves the face" of the defeated among their supporters. In the present case the three halfpennies are being dealt with in three several ways; one is to be conceded immediately, another is to fall due next March, and the third does not materialise, but, by a pleasing fiction, may, nevertheless, be regarded as a consolation prize for the employers. Whether settlement of the dispute in this spirit of conciliation betokens confidence on the part of the employers that business will sufficiently improve to stand the extra cost of labour that has been thus imposed upon it, or whether, on the other hand, they felt that a strike supervening on depression would be the last straw, is a problem that one would rather not attempt to solve. At any rate, it is extremely gratifying to know that at least we are to be spared what would have been a desolating extension of the current epidemic of strikes.

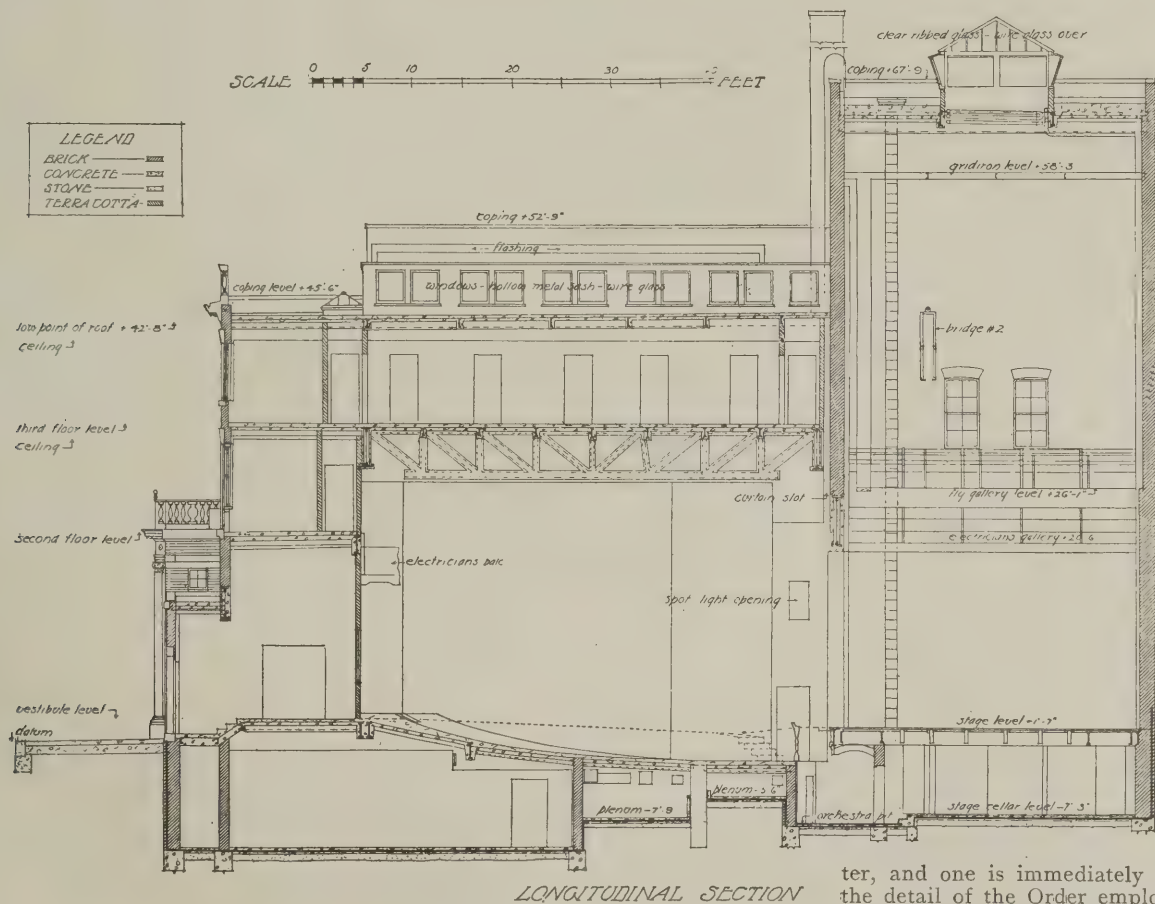
THE LITTLE THEATRE, NEW YORK.

The accompanying illustrations show "The Little Theatre" which has been erected in New York from designs by Messrs. Ingalls and Hoffman. It is a very pleasant building, modelled on what is known in America as Colonial work, and, like "The Little Theatre" in John Street, Adelphi, is delicately sumptuous throughout.

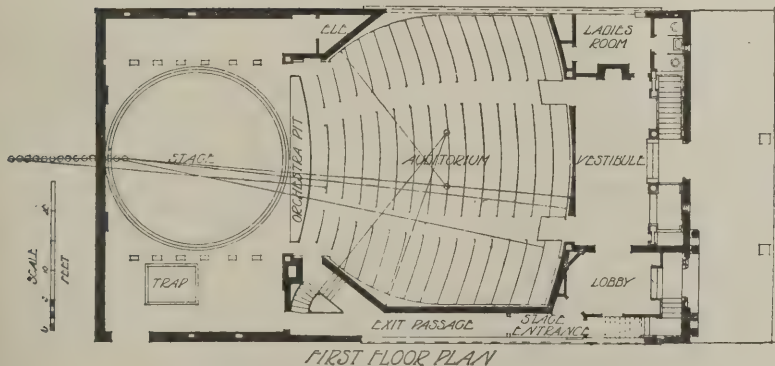
The theatre has been designed expressly for the production of a certain class of plays in which a small caste only is required, and whose fullest effect is obtainable by the placing of seats so comparatively near the stage that no detail, either facial or vocal, may be lost. The architectural treatment is fully in keeping with this idea. The exterior is a radical departure from the usual opulent splendour we are accustomed to see displayed on theatre fronts. It is distinctly domestic in charac-



Auditorium from Stage.



LONGITUDINAL SECTION



FIRST FLOOR PLAN

THE LITTLE THEATRE, NEW YORK.

INGALLS AND HOFFMAN, ASSOCIATED ARCHITECTS.

ter, and one is immediately attracted by the detail of the Order employed, and of the entrance door itself, with its fan and side lights, and the delightful stone tablet above the opening.

Within we find the auditorium (measuring not more than 40 ft. from the front of the stage to the back of the rear seats) treated as a rather monumental Georgian room hung with tapestry, the place of tapestry being taken by decorative paintings in quiet colours. The ceiling is very flat, adorned with plaster work in low relief, and the lighting is by crystal chandeliers and candelabra side lights. The seats are comfortable, and the rise is very carefully calculated to give a full view from every seat to the perfectly flat stage. The latter, 30 ft. in diameter, is one of the very few examples where the Japanese idea of a revolving platform has been incorporated into an American theatre, permitting quick setting of scenes requiring little depth. In other ways the stage is typical of the best modern methods, in that full room for very

high drop scenes is given, and the lighting is perfectly well worked out.

One of the unique features of the theatre is a lounge in the basement which is really used. The room is also designed in Georgian style, and is extremely well furnished.

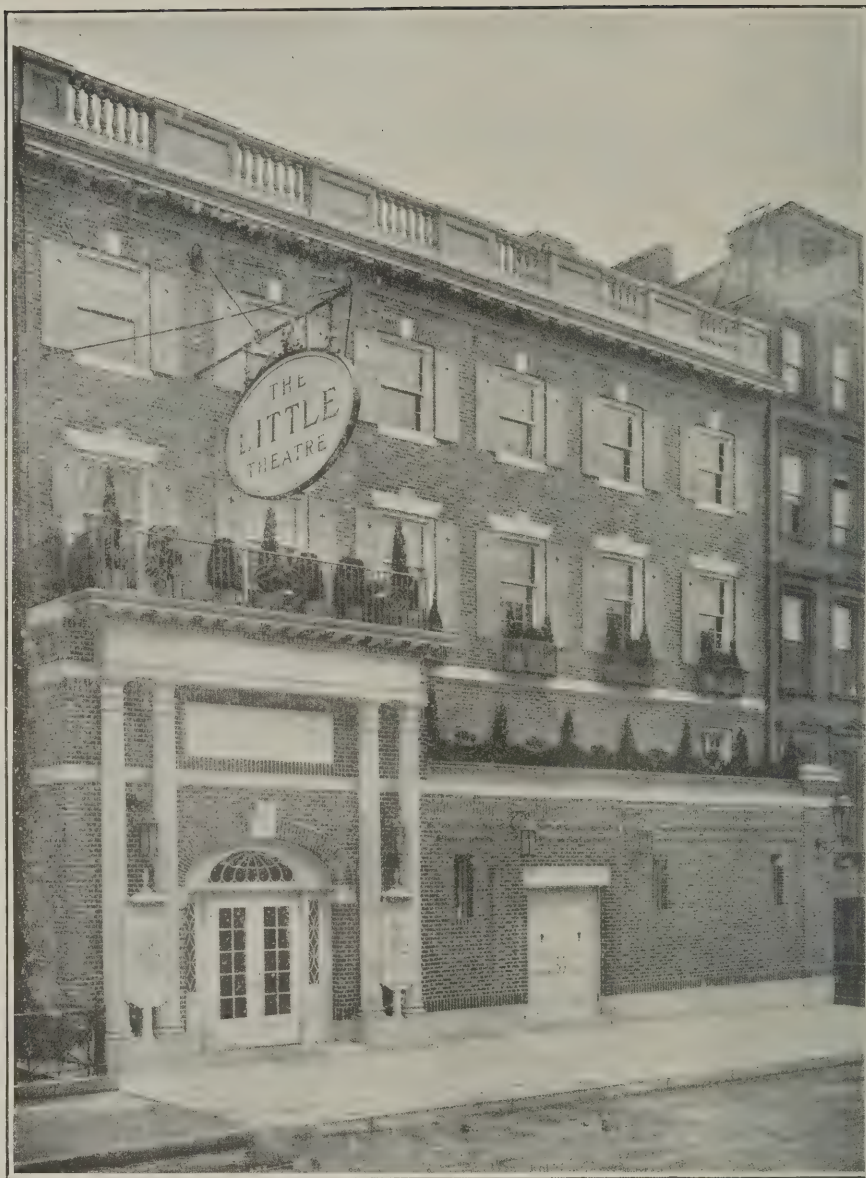
It is a place where not only a few of the thirsty males in the audience can go between the acts, but a large part of the whole assemblage is gathered there to be entertained by an orchestra of five. The smoking room is placed adjacent to this lounge, and it is another charming little Georgian room, although so small as to be inconvenient for any large number.

The exterior of the theatre is carried out in red brick, limestone, wood painted white, and ironwork painted a flat black; the façade being artificially illuminated by a system of indirect lighting. The auditorium has a seating capacity of 300, and is finished in birch of a deep walnut brown tone. The seats are upholstered in brown leather, the curtains are of a Gobelins blue, and the carpet is grey.

MAGAZINES AND REVIEWS.

In the "Burlington Magazine" Mr. Lionel Cust writes a short summary of the scheme for the enlargement of the British School at Rome, which he concludes with some rather pointed questions. In the first place, he asks whether the State and national support of the fine arts at home is so substantial that any large sum can be spared annually for the maintenance of an institution in a foreign country? Then, is it absolutely agreed that modern Rome is a suitable art centre for the development of the young British student? To the first of these questions one would be apt to reply in the negative, only there is the consideration that the existence of the enlarged British School at Rome may react in awakening a little more interest in art at home. To the second question we should certainly reply in the affirmative. There is enough at Rome to stimulate the artistic imagination, and that is what is needed. Then he puts a third question—whether archæology and art, the ends of which are opposed (archæology looking to the past and art to the present and future), can possibly be cared for equally in one institution under a Council which meets in another country. That is a question which we have already touched upon; the British School at Rome is referred to as an institution parallel with the French School; that is to say, it is to be an art school; and yet it is to be presided over, as far as one can see, by two archæologists. That will never do. In the same issue Mr. Aymer Vallance commences a series of illustrated articles on "Early Furniture," and Mr. A. Romney Green contributes the third article of his series on "The Principles and Evolution of Furniture-Making." The article of this month is rather politico-social than artistic; it is a restatement of the theory of William Morris—that art dies as soon as the worker loses his personal interest in the work and becomes a factory hand. The mediæval craftsman, who worked with his own hands, was, as Mr. Green says, a well-paid and important person; in the present day the well-paid and important person is not the actual worker but the middleman who engages him. The only remedy for this is for the public to insist on dealing with and paying the actual craftsman and ignoring the middleman. It is a remedy that would necessarily work but slowly, but it would be certain in its ultimate results.

The "Architectural Record" (New York) is an interesting number. It devotes



THE LITTLE THEATRE, NEW YORK.

INGALLS AND HOFFMAN, ASSOCIATED ARCHITECTS.

one article to a description and illustrations of the old Palazzo Davanzati at Florence, which appears to be the only ancient palace left standing in one of the ruthlessly, but perhaps unavoidably, modernised streets of the city. The façade in the Via Porta Rossa, is that of a building erected somewhere about the close of the fourteenth or beginning of the fifteenth century, a plain, stern stone front with three storeys of segmental-arched windows with very little reveal, and an open colonetted loggia at the top. In the ground storey are three large arches filled up with cross-barred doors (probably not original), and mezzanine storeys are indicated by two rows of small square grated windows. The whole aspect of the building has that curious mingling of Gothic feeling with a presentment of the Renaissance spirit which characterises so many Italian buildings of the period. An article on "Portland, Oregon," dealing with "the transformation of the city from an architectural and social view-point," gives the idea that American architecture is not showing to advantage in this transformation, the new buildings illustrated being for the most part very heavy in style and devoid of architectural charm. "Building a House of Moderate Cost" is the subject of an article by Mr. R. C. Spencer, jun.

He suggests that the feeling for those who desire a constantly rising standard of architectural taste should be, "We care not who designs our churches, court-houses, and marts of traffic, if we may really *design* the homes of the people." This is an exaggeration, of course, but it emphasises a side of architectural development the importance of which is often underrated, and we quite agree with the writer that the satisfactory architectural treatment of a house of moderate cost is really one of the most difficult of problems. It is rather sad to read that "as soon as it becomes known that you are about to build a house you are liable to be pestered by architects looking for a job." Is it really as bad as that in the States? Then Mr. J. T. Tubby contributes a very practical article on "Thrifty Draughtsmanship: The Economies Possible in Work." We recommend this to the notice of draughtsmen; it contains many good suggestions. One very simple and obvious one is to return each instrument, when its use is interrupted, to a certain place, and have a place for it, so that the hand goes at once to it and one has not to waste seconds in discovering "where that bow-pen has got to." Standard scale sheets of drawing paper, with the scale printed on them, and a dot showing the centre in each direction

of the paper, may be useful. Parallel pencils we do not think of any use, as it is so difficult to ensure the two points being cut to the same angle; parallel pens, especially if set to a certain scale, are useful in survey drawing, for roads, and may be to a certain extent useful in architectural drawing. The writer suggests the value of having three or four reliable bow compasses permanently set, and marked, for 4-in. soil pipes, columns, round flue linings, etc., of whatever stock sizes are drawn repeatedly. The author suggests the vertical position of the drawing-board for free-hand drawing, and says it is much used in Germany; there are advantages in it, but a draughtsman would have to acquire the habit of it. When the writer says that for ordinary T-square drawing it is desirable to pitch the board as much as possible—"that is, to a point where the T-square, the triangle, the scale, and the tools just will not slide," we should have thought that a matter of mere common-sense which hardly demanded special notice. We will add, in this connection, a point which does not occur in the article; it is a convenience to have two or three pairs of hard-wood blocks of different sizes, thick enough to have a firm base, by using which as rests a drawing-board can be tilted to a greater or lesser angle as desired. A triangle is always firm on its base. In the description of the new museum of French art in New York, which it appears is to be assisted by objects lent by the French Government from time to time, there is an odd mistake in the title of a print called here "The Tuilleries." Not only is the name mis-spelt, but what the drawing shows is not the Tuilleries, but a view of the west aspect of the Louvre. The Tuilleries was no part of the Louvre; it was the cross block connecting the western ends of the Louvre galleries. The Tuilleries has no existence now. Its buildings were wrecked in the Commune, and subsequently removed altogether.

The "Nineteenth Century" contains an article by Mr. H. H. Statham, "At the Salon and the Royal Academy," in which, contrary to the general practice in exhibition criticisms, the sculpture is given the first place in the article; and at the Salon it is really the most important portion of the exhibition. As the writer remarks, it is too much the fashion, both with spectators and critics, in this country, to devote nearly all their time to the pictures and content themselves with a hurried glance at the sculpture afterwards. At the Academy the sculpture is forced into so subordinate a position that there is some excuse for this; but it is quite otherwise at the Salon, where the annual exhibit of sculpture numbers nearly a thousand works, many of them of great scale and importance. The writer urges that the Academy ought to give a larger space to sculpture in their annual exhibitions.

In the "Contemporary Review" Mr. March Phillipps, in his article on "The Gothic Ideal," harps on the same idea as that of Mr. Romney Green in the "Burlington Magazine." The Gothic ideal, he urges, is not in buttress, shaft, pointed arch, etc., but in the root principle that the manipulation of any material to the production of artistic work is the function of the man who works in the material and knows it. We may add that many architects know this perfectly well, and endeavour to act upon it, and that architects are not all the narrow-minded persons Mr. March Phillipps appears or professes to think. But in modern architecture there is another element which he does not seem to realise, viz., the complication of plan for

a special purpose; and "The Gothic Ideal" will never grapple with that by the craftsman process. It needs the central mind; in fact, the modern architect is actually in the position of a craftsman in the production of plan and section. Writers on art from what may be called a socialistic art point of view seldom or never see that if important modern buildings were left to be planned and carried out on Mr. Phillipps's "Gothic Ideal" theory, there would be an end of all good planning. But the article is worth attention.

The "Century" publishes an illustration of what is called (we know not why) "The Perry Memorial," which appears to be a memorial proposed to be erected "at Put-in-Bay, Ohio," to commemorate the battle of Lake Erie and the hundred years of peace between Great Britain and the United States. And what form does the reader suppose this memorial takes? A Doric column of colossal—we might say more than colossal—size, standing up against the sky, with a little kind of shrine built on the centre of the abacus; and at considerable distance to right and left of it two small columned temples; the whole on a low flat shore. It certainly looks impressive in the illustration, but it is a most extraordinary and not very happy use to make of the Doric column.

COMPETITIONS.

The Soane Medallion.

The attention of intending competitors for the Soane Medallion is called to the following modifications in the conditions:—

1. No restriction is placed on the size of the strainers; at the same time they should be of reasonable size.
2. The plans, sections, and elevations to be drawn to 1-16th scale.
3. A section through the front buildings up to and including the rail heads of the lines to be drawn to a scale of 8 ft. to an inch.
4. Plans of the upper floors and basement need not be drawn.

New Church, Carrington.

The design of Mr. Curtis Green, F.R.I.B.A., of London, has been selected in this competition. The cost of the church is estimated at £10,000.

PROGRESS WITH THE LONDON COUNTY HALL.

At a recent meeting of the London County Council the Establishment Committee was instructed "to expedite the completion" of the new County Hall, and to report immediately to the Council the steps they proposed to take in order to carry out this instruction. The Establishment Committee now report that the two governing factors at the present time are the dates of the delivery of drawings of the superstructure by the selected architect and the date of completion of the sub-structure of the central section. On the assumption that the selected architect will deliver the drawings of the central section at the beginning of July, and those of the southern and northern sections at the end of August, it is estimated that their examination by the official architect, the preparation of the quantities and the estimate, the invitation to firms to tender, and the execution of the necessary contract, will take approximately until the date of the completion of the central section of the sub-structure, namely, April 12th, 1913. Should it be found that the period required for the examination of drawings, the taking out of quantities and the like, can be shortened, special steps can be taken to complete the sub-structure at an earlier date. As to the erection of the superstructure, the Committee suggest that alternative tenders should be invited, say for three or two years, with a bonus for each week saved on the contract time. If the carrying out of the scheme be expedited in the manner suggested, the Committee are not without hope that the revised dates which they now submit may be improved upon. On present calculations the sections should be completed by the following dates:—Central section, April 12th, 1916; southern section, March 15th, 1916; and northern section, June 12th, 1915. The Committee also desire to correct the supposition that some restriction has been imposed on the spending of money required for the new County Hall. On the contrary, money has been voted as quickly as possible in order that the work may be pushed on with all despatch.

If the work is going to be furiously "hustled," the architects and the contractors are to be commiserated.



THE LITTLE THEATRE, NEW YORK: THE PROSCENIUM.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

*St. Paul's Bridge and the R.I.B.A.
To the Editor of the ARCHITECTS' AND
BUILDERS' JOURNAL.*

Sir,—In the Annual Report of the Institute, which was submitted to members on May 6th, the Council called attention to their action in connection with the St. Paul's Bridge scheme.

In the House of Commons on June 14th, 1911, the Chairman of Ways and Means (Mr. Emmott) stated that the representatives of the Institute had "failed in doing their duty." I called attention to that failure at the meeting on May 6th, and the President refused to allow my remarks to be printed in the Institute Journal, which simply states that I "went on to criticise the inaction of the Council in not attending before the Committee of the House of Commons. In the circumstances I am not at all surprised at the ruling of Mr. Leonard Stokes, and I ask for the hospitality of your columns to state the facts and to quote a few comments upon the policy of the R.I.B.A. in connection with the most important scheme for the improvement of London that has been before the public for many years, a scheme that has frequently been referred to as one of "national importance."

The Royal Institute of British Architects presented a strongly-worded petition to Parliament against the Bill: it is printed in the Institute Journal of February 18th, 1911, and it is signed by Mr. Stokes, three other members of the Council, and the secretary. The following are extracts:

"Your Petitioners' Institute, as the only chartered body of architects in the United Kingdom, accepts and claims as part of its responsibility and public duty the function of tendering advice to the Government. The advantage to the community of having at its disposal the technical advice and experience of a body of experts is admitted on all hands."

The following are extracts from speeches delivered in Parliament on June 14th, 1911; they are taken from the Official Report of Parliamentary Debates, Vol. 26, No. 85, published by H.M. Stationery Office.

Mr. Mooney (Chairman of the Committee): May I inform the House very shortly what are the facts in this case? The Institute of British Architects petitioned against this Bill, and lodged their petition in the usual form. When the Committee sat the Institute did not think it worth while to appear before the Committee. As chairman of that Committee I expressed astonishment at the fact that the architects were not represented before the Committee, and I went out of my way to invite them to appear before us, and give us the benefit of their ideas. The invitation was mentioned in the London papers, but the architects never appeared before us. . . . I would have been far better pleased if the Institute of Architects had come before us and given us the official view of the scheme.

Mr. Morrell: Had the architects an opportunity of explaining their point?

Mr. Mooney: I said before, I personally invited the architects to come before us and they declined to do so. . . . When the Committee sat the Institute did not appear before them. They wrote to "The Times" and said the reason they

did not appear was on the ground of cost. I invited the Institute to send a representative before the Committee. The total cost to the Institute would be four guineas, yet the House of Commons is asked to-night to send this Bill back to the Committee in order to suit the Institute of British Architects.

Sir William Gelder: Why should the architects be required to spend £500 or £1,000 in opposing a scheme of this kind any more than any other class?

Mr. Mooney: If the Institute of British Architects had followed our suggestion they would have incurred no such cost; they could have come before the Committee and given their opinion.

Mr. Lamb: On this occasion the Chairman of the Committee invited them to come to the Committee, and yet they did not appear.

Lord Balcarras: I frankly regret the attitude of the Institute of British Architects. I am not in their confidence . . . from the knowledge I have of architects I think the hon. member opposite was very wide of the mark when he suggested that they did not place their case before the Committee simply because it would have placed a small expense on their personal pockets. I do not believe that.

The Chairman of Ways and Means (Mr. Emmott): Is it fair that the Committee should suffer because architects have failed in doing their duty? The Institute of British Architects did not appear before the Committee, although every chance was given to them to appear. No objection was made to their *locus*, and the chairman sent them a special invitation. I really think the hon. member for Brigg (Sir William Gelder) was hardly fair to the members of his own profession when he said it was a question of cost. I really do not think so meanly of the architects. If this is a matter of great public interest on which they feel so strongly, surely some of them would come forward and give evidence. . . . The architects had their chance and they did not take it.

Mr. Alfred Lyttelton: . . . He has actually said that because the Institute of British Architects failed to respond to the invitation of the Committee, London is for all time to be treated as if that evidence was not forthcoming and as if no other person could give it but the Institute of British Architects. Nothing could be more fundamentally wrong than that. The interest of the public is of great interest here. What has the public to do with the failure of the British architects to come before the Committee?

In consequence of the above strongly-worded comments I submit that a full explanation is due to the members of the R.I.B.A.

SYDNEY PERKS, F.R.I.B.A., F.S.A.
London.

*The Newer Responsibilities of Architects.
To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.*

SIR,—Referring to the fourth paragraph of the leading article in your last issue, it is surely, as you suggest, ridiculous that the building owner cannot dismiss his architect without the consent of the builder. I have not read the Official Referee's judgment in the case of *Minter v. Waldstein*, and cannot say whether Mr. Woodward has interpreted him rightly, but if so, it would be interesting to hear the arguments and cases upon which the decision rests.

In the first clause of the Articles of Agreement (R.I.B.A. Conditions of Con-

tract) the architect is described as "his" (the employer's) "architect." He is paid by the employer, and his only responsibility to the builder—or, rather, jointly to the building owner and the builder—is in the exercise of his judgment upon possible matters of difference between them. In signing the contract, the builder implies his acceptance of the architect in this capacity; but he does not pledge himself to accept any other architect the building owner may employ. Clause 3 of the "Articles" gives him the necessary protection against the subsequent employment of a different architect than that named in the contract.

With respect to the clerk of works, it is amazing that, in view of clause 7 of the conditions, contractors should so often plead his authority for deviations.

A. SAXON SNELL, F.R.I.B.A.

London.

Plaster Reproductions.

*To the Editor of the ARCHITECTS' AND
BUILDERS' JOURNAL.*

SIR,—We note with pleasure your very appreciative note of Miss Casella's exhibition of plaster reproductions now on view at our galleries.

In writing his criticism of the bust by Mino de Fiesole, however, your critic appears to have overlooked the note we particularly printed in the catalogue to the effect that, in order to show the possibilities of the processes she employs, Miss Casella has in certain instances deliberately produced marble originals as wood, and vice versa. The Mino bust is one of the notable examples of this: deliberately incorrect treatment by Miss Casella. We should be obliged therefore if you could find space for this letter.

Per pro. The Medici Society, Limited.

ARNOLD FAIRBAIRNS, Director.

Grafton Galleries, London.

[If the above is the explanation, we think it was an artistic mistake to take what was originally a marble bust and imitate it in the likeness of a wooden one: for the technique of marble carving is necessarily different from that of wood carving.—ED. "A AND B. J."]

*Insulating Material for Hollow Walls.
To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.*

SIR,—I note in your issue of May 29th the enquiry by "Ailsa" as to the best insulating material with which to pack either a hollow wall or a framed partition for the purpose of forming an effective cold-storage chamber, and the reply thereto by "G."

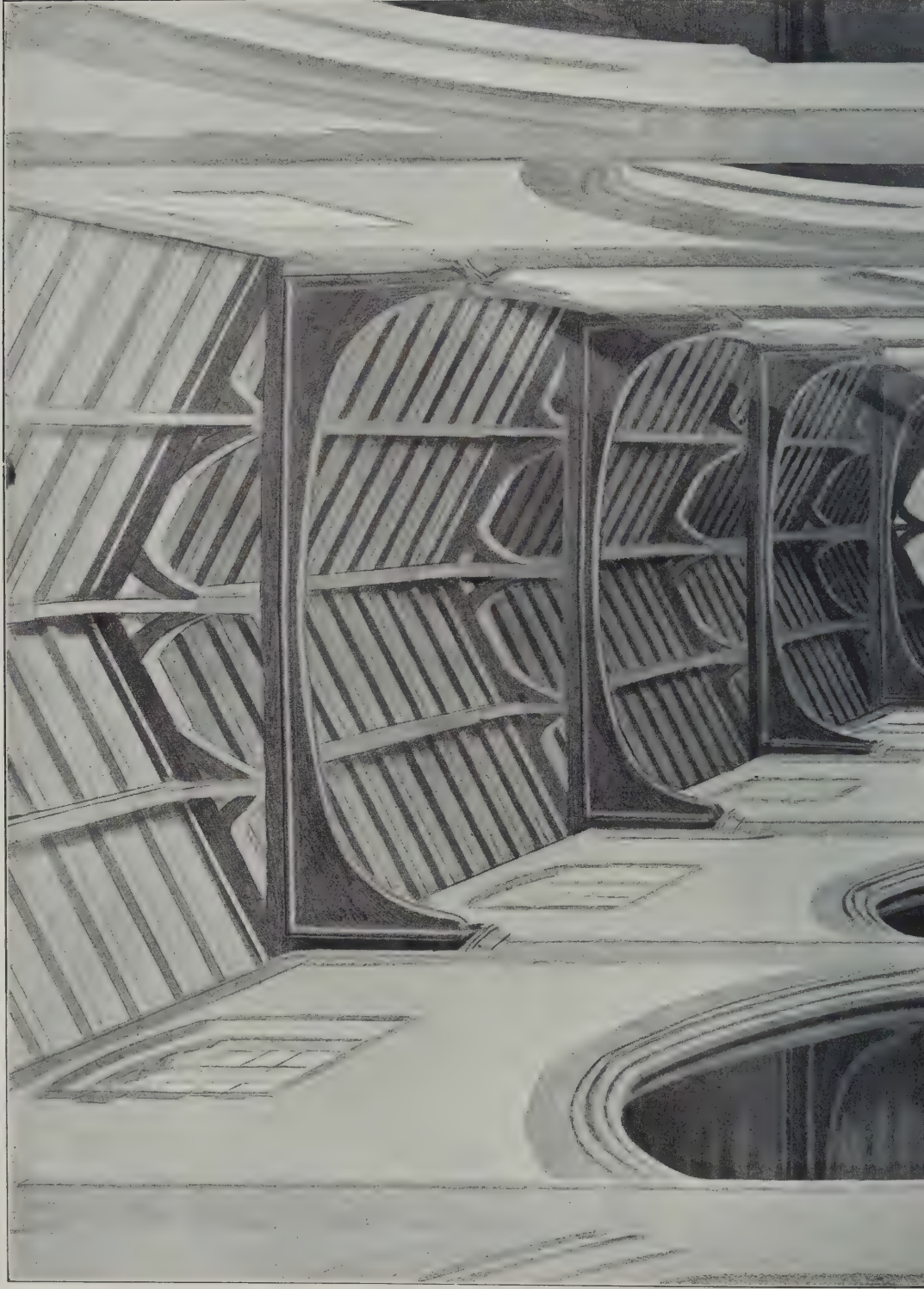
Both writers appear to be ignorant of Cabot's sheathing and insulating quilt regularly advertised in your pages. . . . Cabot's Quilt retains the separate air spaces indefinitely. The long ribbon-like fibres of ell-grass of which the quilt is made cross each other at every angle, and form within each layer of quilt innumerable minute cells of "dead" air, thereby making a wonderfully effective non-conductor.

"A."

A Housing Congress for Amsterdam.

An International Housing Congress is to be held at Amsterdam in September, 1913. It will consider the general question of cheap dwellings, inquire into the ways and means of ameliorating the conditions of rural housing, the sanitation of unhealthy areas or tenements, the question of overcrowding, and, finally, the problems of town-planning.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, June 19th, 1912.





STANLEY-ST. PETER.
WAKEFIELD.

W. D. CARÖE, F.R.I.B.A., F.S.A., ARCHITECT.
(*Royal Academy Exhibition, 1912.*)

الحمام
مجلس
مجلس

THE SHOP-FRONT PROBLEM.

Mr. Selfridge's Opinion.

In recent issues of this journal the problem of the design of shop-fronts has been discussed at some length. The architectural side of the question has been put forward with emphasis, but we have not been oblivious to the shopkeeper's requirements and desires, and in order to present these authoritatively we approached Mr. H. Gordon Selfridge, whose fine building in Oxford Street is certainly an excellent example of the way to treat the shop-front. Mr. Selfridge says, in a letter to us:—

"With the writers of the articles on London shop-fronts in your issues for April 17th and May 8th I do not quite agree. In one the Piccadilly Hotel building in Regent's Quadrant is designated as a 'grand piece of street architecture,' but with this description I must be permitted to differ. To me the design always seems to be an effort to do something large on original lines; but discovering originality in architecture in the twentieth century is very much like discovering originality in mathematics. I think we shall wait a long time before either façade is reproduced elsewhere, for, in my opinion, the building in no way improves London's none too impressive street architecture.

"On the other hand, I am one who believes that dignified architecture aids very much that business which it is to house. I differ from the writer of the letter published in your issue of May 8th, inasmuch as I feel that the entire abandonment of all attempts at fine architecture simply to provide a showcase from which the owner of the shop can sell a few more goods is most undesirable.

"It would be well to study the question from a broader point of view. What are the most pleasing and satisfactory results obtained in France, America, Germany? No good building rests upon what appears to be a showcase. Every well-designed edifice must have *apparent* means of support, evidently strong enough to sustain the superstructure. A building should, therefore, have piers which are not hidden by mirrors nor by decorations. The best buildings in the countries mentioned, whether used for little shops or large stores, are all supported from the ground by columns and piers evidently strong enough to carry the weight.

"While decrying the Quadrant design as, in my opinion, extremely unsuccessful, I earnestly advocate a street architecture which shall be fine, stately, and dignified. I urge that commerce and architecture shall be twin brothers, or partners in the scheme rather than enemies, and that all

sense of what is good in one shall not be sacrificed to secure what may seem, for the moment, to win a little better result in the other.

"The show-window is considered in London, more than anywhere else in the world, as of prime necessity to the shopkeeper. Personally, I do not agree with this position, and if I may refer to our own Store, I would say that the show-windows are important, but by no manner of means the whole thing. We could abandon our windows and do probably four-fifths as much business, simply because we insist that the departments themselves shall be the chief attraction, rather than the windows.

"The man who pays the rent must have something to say as to the building itself, otherwise he may refrain from occupying the same, but I hope that, while he is making his requirements known, he will feel that real architectural excellence supplies an asset to his business, and gives it, in addition, a dignity and character which a simple showcase-of-a-shop cannot possess."

We are very glad to publish the above expression of opinion. Mr. Selfridge may differ from some of our views of the merits of Mr. Norman Shaw's design for the rebuilding of Regent Street Quadrant, but it will be noticed that he is in complete accord with us in the contention that it is impossible to secure a satisfactory architectural result when every inch of available space is demanded for the shop window and when all supports for the superstructure are persistently hidden or disguised.

A Cardiff Shop-Front.

In connection with this design by Messrs. Pollard and Co., published below, the following particulars are supplied: "It is considered that in this scheme the architect's objection, in a general way, to a shopfitters' design is overcome. The pilasters are reasonably bold and the four columns at the entrance look substantial enough to support the superstructure; while, of course, the bases and capitals of the columns provide an opportunity for a certain amount of architectural detail. But although the supporting columns are such a prominent feature in this shop-front, they do not take away any space from the window—in fact, by the ingenious manner in which the glass has been carried round, the window is very much enlarged. No space has been sacrificed for these architectural embellishments, which is satisfactory from the commercial point of view. Hence it is considered that this design is a reasonable attempt at a compromise between the two opinions."

OUR PLATE.

Stanley St. Peter's, Wakefield.

The Church of Stanley St. Peter, Wakefield, was one of the churches erected to commemorate the Peninsular War and the Battle of Waterloo. It was carried out in the "Perpendicular" manner of those days, but with stone windows, not cast-iron, as commonly employed then. It originally consisted of one vast nave without columns under a single roof, but the acoustics were so impossible that changes had to be made. In the last quarter of the nineteenth century stone arcades were introduced, with false wood roofs underlying the weather roof. A year ago the church caught fire in a gale of wind and was entirely gutted, the external walls only being left standing. A new interior is now in course of erection, which includes a chancel. Messrs. Willcock and Co., of Wolverhampton, are the contractors. The architect is Mr. W. D. Caröe, F.R.I.B.A., F.S.A., of Westminster, whose drawing (reproduced as the Centre Plate in this issue) is exhibited at this year's Academy.

THE LONDON BUILDING TRADE
DISPUTE SETTLED.

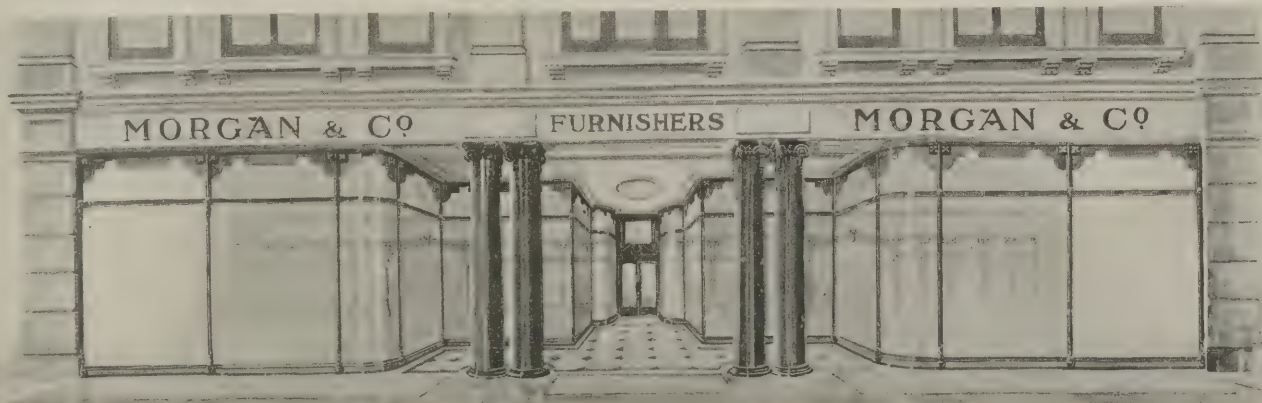
The Amalgamated Society of Carpenters and Joiners has decided by a ballot vote to accept concessions offered by the London building trade employers, and as substantial concessions are also offered to the builders' labourers and other unions involved the strike notices which had been tendered will be withdrawn. It is understood that, instead of the immediate increase of 1½d. an hour demanded by the men, the employers offered to the carpenters and joiners an increase of ½d. an hour in September, with a further ½d. an hour next March, the present hours to remain unchanged.

R.I.B.A. DESIGNS FOR FINAL
EXAMINATION.

The Board of Architectural Education of the Royal Institute of British Architects announce the following additions to the list (see our issue of May 29th, page 566) of students whose designs for the Final Examination have been approved:

Subject I. (b).—(A Terrace of Five Houses). Mr. E. H. Gibson.

Subject II. (b).—(A cloister with external entrance gateway or tower to a collegiate building). Mr. E. H. Gibson and Mr. Wm. Voelkel.



DESIGN FOR A SHOP-FRONT AT CARDIFF, BY POLLARD AND CO.

NEW BOOKS.

Some Technical Manuals.

Two handy little books that deal with different aspects of a similar subject come from Messrs. Cassell. In "Bevels and Cuts," Mr. Edward Hardy claims to have "succeeded in evolving a system whereby the artisan can find the angles in such a position that he can easily adjust his bevels to them, and whereby he can develop his lines on the piece of timber which it is desired to cut." The system is made plain in a series of 228 diagrams. The price of the book is 2s. net. "The Steel Square and Its Uses Simply Explained" is illustrated with 200 diagrams, and is issued at the same price by the same firm of publishers. It deals mainly with the setting out, by means of the steel square, of all forms of roofs, but there are also chapters on the application of the system to stair-casing, handrailing, and door-framing.—It is more pleasant than surprising to find the manual by Mr. Frederic Richard Farrow, F.R.I.B.A., on "Stresses and Strains; Their Calculation and that of their Resistances, by Formulæ and Graphic Methods" (Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C.; price 5s. net) has reached a second edition. The book has been to some extent remodelled. The examples have been associated with the particular branches of the subject to which they refer, instead of being collected in an appendix, additional matter has been included, and the calculations have been carefully checked throughout. The author, who, it will be remembered, was formerly Lecturer on Construction at the Architectural Association and

sometime Lecturer on Architecture at Liverpool University, has been careful to avoid the assumption of a greater familiarity with mathematical work than the average architectural student possesses. Tables of the strength of materials and other data are usefully included.—The latest addition to the excellent series of "Installation Manuals" which are being issued by Messrs. Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C., is an eighty-eight-page book, with rounded corners, that it may be the better accommodated in the pocket, on "Testing, Fault Localisation, and General Hints for Wiremen," by Mr. J. Wright. This is essentially a practical work and therefore avoids unnecessary theoretical disquisition. The operator is simply told what to do, without troubling him to master the abstractions that govern the action. There is, however, sufficient theory to enable the wireman to take an intelligent interest in his work.

The Mechanics of Building Construction.

The young architect, fascinated by the artistic side of his profession, too often neglects such studies as imply less prettiness and more fag. The mechanics of building construction, for instance, are seldom attacked with any high degree of enthusiasm, and the half-heartedness—not to say the whole-hearted aversion—with which this department of professional education is commonly approached is responsible for much incompetency. Distaste for the subject is more often intensified than corrected by the "base mechanical" way in which it is taught in classrooms and set forth in text-books. The author of the text-book under notice adds to uncommon skill as a teacher and lec-

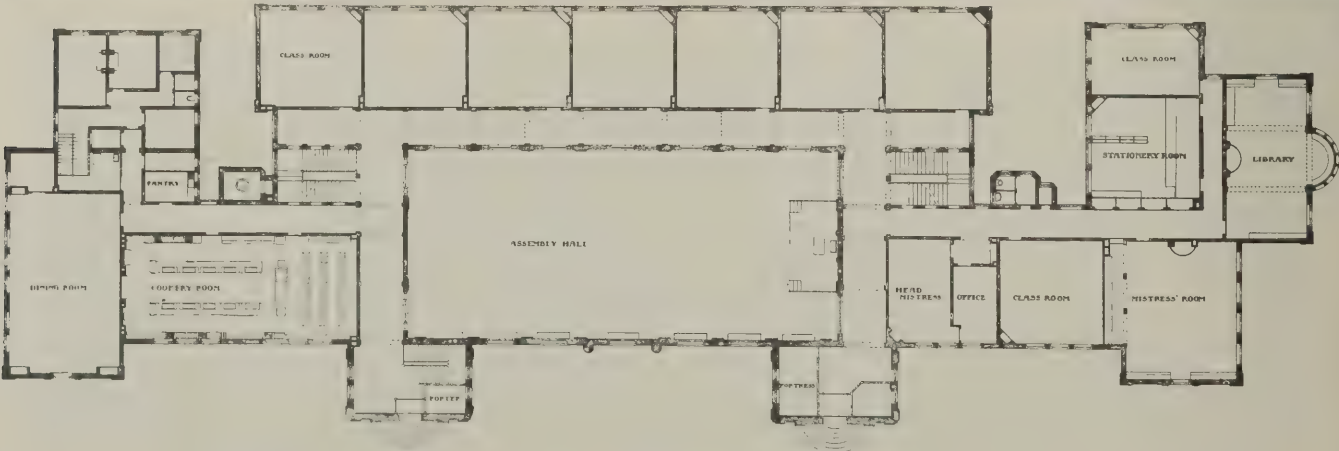
turer a rare gift of clear exposition as a writer and draughtsman; nor is his knowledge of the subject merely academically derived. It is largely drawn from extensive practical experience. He is, in short, in every way highly qualified to afford competent guidance in a subject which, as he is able to expound it, seems by no means so abstruse as many timid souls imagine it to be. This book should therefore prove to be of real value to the student. Principles are explained in popular language, and afterwards their operation in or application to practical issues is illustrated both verbally and graphically.

The Mechanics of Building Construction. By Henry Adams, M.Inst.C.E., M.E.A., etc. With 590 diagrams. Pp. xii. + 240, 6 ins. by 9 ins., 6s. net. London: Longmans, Green & Co., 39, Paternoster Row, E.C.

KING EDWARD VI. SCHOOL FOR
GIRLS, BIRMINGHAM.

This school has recently been erected at Handsworth, Birmingham. Accommodation is provided for 475 girls. The assembly room measures 100 ft. by 44 ft.; beneath it are cloak room and drying room. At the south end of the building on the ground floor are the mistresses' rooms and the library, above which are the science rooms. At the other end is placed the caretaker's house, and the cookery classroom and dining-room, with the art rooms over. In the basement there is a gymnasium, also the play room, 120 ft. by 22 ft., opening direct on to the playground.

The architects of the school were Messrs. J. A. Chatwin and Son, of Birmingham, and the contractors Messrs. Collins and Godfrey, of Tewkesbury.



KING EDWARD VI. SCHOOL FOR GIRLS, HANDSWORTH, BIRMINGHAM: GROUND-FLOOR PLAN.
J. A. CHATWIN AND SON, ARCHITECTS.

AVIATION AND THE STRUCTURES OF THE FUTURE.*

BY HORACE CUBITT, A.R.I.B.A., P.A.S.I.

That the ultimate developments of Aviation must profoundly modify social life as well as international relationships and must affect building design and construction and the aspect of towns, is no longer merely a subject for weak jocularity and strong fiction, but for rational conjecture. Mr. Cubitt's paper represents a serious attempt to assemble and consider the practical factors of some of the problems that seem likely to arise.

ALTHOUGH a treatment of the subject-matter of this paper may appear to be but drawing a bow at a venture, yet upon analysis some conclusions result which may not be very far from the mark. A necessary preliminary to theorising on the aviation structures of the future is a consideration of the structures of the present. These, of course, are met with at every aviation ground, and consist of the workshops in which the aeroplanes are constructed and repaired, and the "hangars," or, in plain English, the sheds in which they are housed. To call a spade a spade is an English characteristic, and I see no reason why we should not call a shed a shed, and have done with it.

These buildings—workshops and aeroplane-sheds—as at present constructed, seem to be of a somewhat temporary character, the enclosures being of wood studding covered either with boarding or corrugated iron, and the roofs being light corrugated iron structures. This is only natural. In the early stages of any industry it is bad policy to erect buildings of too permanent a character, as it is very probable that a short experience will show that considerable alterations in planning and arrangement are required. But in course of time, when the twin industries of aeroplane construction and aerial transit are established as large factors in our national industrial programme, buildings of this slight construction will not suffice. When, in any industry, standard types of buildings have been evolved, it is bad economy in the long run to have resort merely to the semi-permanent forms of construction. Corrugated iron in our climate must be painted every year or so, otherwise the galvanising wears off and the material rusts through. The cost of maintenance is thus very heavy, and even if the material is well painted a life of more than thirty years is hardly to be expected. These remarks do not apply in quite the same degree to buildings with boarded enclosures, but there is the risk of fire to be considered, and in consequence this method of construction is prohibited by practically all local by-laws, except in situations remote from other buildings. All things considered, there seems no reason to suppose but that, when our knowledge of the requirements has been evolved from experience, aviation buildings will be as permanent in construction as those now erected in connection with the motor-car industry.

Forms of Construction.

When consideration is given to the form which this permanent construction will take; it is, however, a question whether plain brickwork will hold its own, or whether it will have to give place to one of the more modern forms of construction. As regards the aviation workshops, these, in common with new workshops of other kinds, may very probably be constructed

of a steel skeleton filled in with brickwork, or of that new combination of materials, reinforced concrete. Aeroplane-sheds, necessarily being, it is presumed, one-storey buildings of moderate height, will hardly lend themselves to steel-frame construction, but it would appear that reinforced concrete is particularly suitable for structures of this character. Experience in connection with the new General Post Office and elsewhere has shown that reinforced concrete is particularly suitable for buildings requiring large areas of unencumbered floor-space. Therefore it may be assumed that it will in due course be largely adopted for the construction of aeroplane-sheds, particularly if it is possible, as I believe now to be the case, to form watertight roofs of this material without asphalt or any other kind of covering.

One special constructional point in the design of aeroplane-sheds, whether buildings of the present size or those of the much greater proportions which we may expect to see in the future, appears to be the doors or shutters to close the necessarily large main openings. At the London Aerodrome the constructors of the various aeroplane-sheds will be seen to have exercised considerable ingenuity in the design of the wooden doors. It is evident that if the ordinary practice of making two folding doors to the main opening of a structure were adopted in the case of an aeroplane-shed, such doors would, on account of the great size of the opening, be most unwieldy, and the task of manipulating them in a gale of wind would be positively dangerous. Hence the need for doors or shutters which can be folded into several sections. While such a contrivance as that of having wooden shutters with vertical pivots sliding in grooved iron bars at the top and bottom of the opening may be efficient enough to warrant its occasional adoption in permanent buildings, it seems probable that, in the best class of work, steel rolling shutters, similar to those adopted in tramcar sheds, will be employed. Such shutters need not be in large widths, and would thus cause no difficulty in operation, while the advantage of having the shutters entirely out of the way when not in use is very evident.

A further important constructional point which does not occur in modern aeroplane sheds, but may be anticipated in future constructions, is the obtaining of large floor spaces with the absolute minimum of columns or stanchions. At present the aeroplanes in use are comparatively small—that is, compared with those we may expect in the future—and it is not, I believe, customary to put a number of aeroplanes in one shed. But, in due course, when an enterprise with such a title as the London Aerobus Company is in full swing, each building at the company's depôts will doubtless be constructed to contain a considerable number of aerobuses, and with these vehicles exceeding by many times the size of a modern biplane it will be necessary to keep the floor space almost entirely free from columns. To effect this

with due regard to economy will not be easy, but probably by a skilful use of reinforced concrete the problem will be satisfactorily solved.

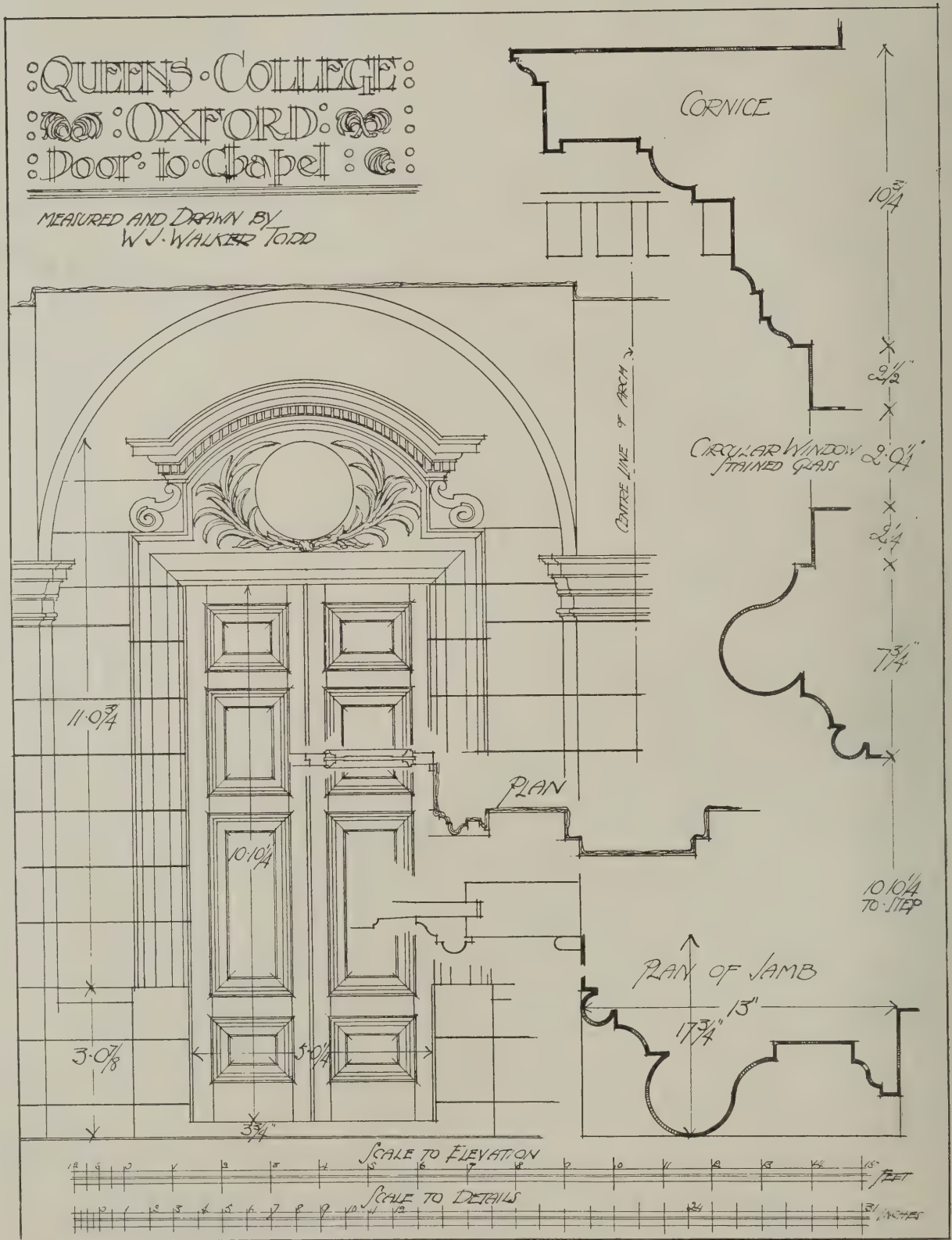
Thus far the structures considered have been those for important aeroplane enterprises. But, with the development of the science of flying, it is to be anticipated that before very long venturous spirits will be seized with the desire of discarding their motor-cars for aeroplanes, and an aeroplane shed will be a necessary complement to the outbuildings of a well-equipped house. The only special question which appears to arise in connection with such a building is the provision of a sufficient space for starting in front of the shed, it being an obviously difficult matter to "take wing" in the middle of a street of ordinary width, should such be allowed, as it probably will not be, by the responsible authority.

Town Landing Stages.

The subject of the structures to be erected as workshops for the manufacture of and as sheds for the housing of aeroplanes makes no great demands on the imagination. Structures of this kind already exist as a guide, and, in any case, the uses to which the buildings are to be put are not such as to necessitate any striking departures in construction. When the landing stages to be erected in large towns are considered, a more difficult case for speculation occurs. That such landing-stages will be necessary is almost self-evident. As soon as the risk associated with aeroplane flights has been reduced to a reasonable minimum, the present prohibition of flying over towns will be removed, or at any rate modified so as to be made applicable only to the central portions. Since town arrival and departure stations will require to be formed in populous districts where land is of considerable value, it will be a financial impossibility to provide open spaces at ground level of sufficient area to enable aeroplanes to descend and ascend without running the risk of coming into contact with the adjoining buildings. Hence the necessity for landing stages a little above the level of the buildings.

When I came to give a little direct attention to the subject of the design and construction of these landing stages for aeroplanes, I found upon self-analysis that such impressions as I then possessed had been formed by the perusal of a few works of authors of "futurist" tendencies, who, in writing of the wonders of a coming century, had given free rein to their imagination, regardless of the result—so long as it was sufficiently extraordinary. Landing stages, as thus described, were to be gaunt steel structures with legs like small Eiffel towers, dominating the country for miles around and making our ordinary buildings look mere pigmies beside them. There is no reason, however, to think that we are coming to this. In the first place, we are not likely to get uncased steel structures, standing in the midst of ordinary buildings. Local authorities would hardly allow them, because of the risk to adjoining buildings by their collapse in the event of a fire. Also we are not in ordinary cases, I think, going to have stages consisting merely of legs and a platform like a derrick. If, as seems certain, tall landing stages are to be erected in districts where land is very valuable, it will obviously be desirable to utilise the space below the landing stage—i.e., to erect ordinary buildings upon it. But if the site is cleared, and the buildings and the landing stage are to be erected at the same time, the question will at once arise, "Why not

* Extracts from a paper presented at a meeting of the Institution of Municipal Engineers on June 12th.



For particulars, see p. 636.

form them as one structure? If this is done, it will be obviously a waste of space to provide separate legs for the landing stage, as such stage can be easily supported on the walls or other enclosures of the building. Thus, prosaic as it may seem, the aeroplane landing stage of the future will probably be nothing more than a large and lofty building with a flat roof, on which and from which the aeroplanes will alight and depart. Lifts will, of course, be provided from the landing stage to the street level. The necessary waiting-rooms, etc., in connection with the aviation service will be placed in the top storey, and the lower storeys let as offices or for trade purposes.

It may be asked, How big are such aviation buildings likely to be? With aeroplanes of present-day size probably a landing stage 80 ft. to 90 ft. in width and about 200 ft. long would suffice to provide both departure and arrival platforms side by side. But, with the machines increased very considerably in size so as to be able to carry a fair number of passengers, it would seem that an area of at least 200 ft. by 200 ft.—nearly that of the Selfridge building, Oxford Street—would be required. Then there is the question of height. The ordinary limit of height for London buildings is 80 ft. to the top of the parapet plus two storeys in the roof, which results in a height of, roughly, 100 ft. from the street level to the ridge of the roof. Having regard to the desirability of being above all roof eddies, it would seem that the landing stage level should be about 120 ft. or 130 ft. above the street. This may appear an excessive height in a position where the surrounding buildings are comparatively low, but, except in a case where the immediately adjacent ground and buildings are in the ownership, or by some other means are under the control, of the body erecting the landing stage, it will be a questionable policy to erect a stage of less than this height. For, if such is done, there will always be the risk of its utility being jeopardised by the erection of new buildings, or the reconstruction of existing ones, to the legal limit of height.

As regards the form of construction to be adopted, neither brickwork nor stonework is suitable, if economy is a consideration. Both steel and reinforced concrete possess great advantages over the older forms of construction in the case of the erection of lofty buildings. As to which of these two forms of construction—a properly encased steel frame or a scientifically designed arrangement of steel and concrete—is likely to be adopted, it is hard to say. Probably both forms will find their supporters. A great deal has lately been written in praise of reinforced concrete, but the advantages of a steel frame for a lofty structure must not on this account be overlooked.

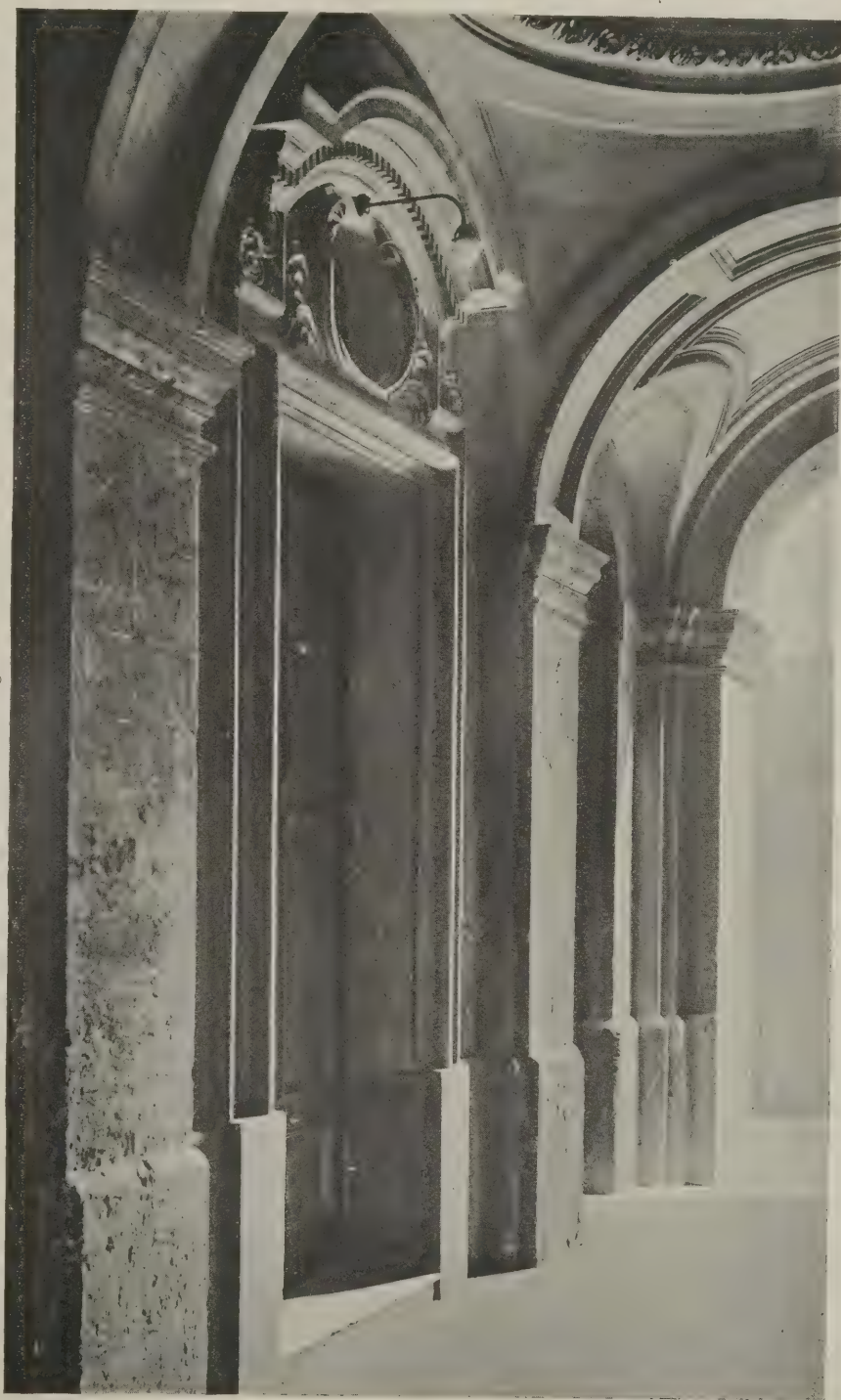
Situation of Aviation Structures.

A treatment of the aviation structures of the future is hardly complete without some reference to the situations in which they are likely to be erected. Having regard to the great distances that aeroplanes are able to cover in a few minutes, it seems reasonable to suppose that the sheds for the storage of the machines will be erected in the extreme outer suburbs of our towns, where land can be purchased at very little above agricultural value. The workshops will doubtless adjoin the sheds, but, of course, there will need to be a workshop or two in the heart of a town, so that urgent repairs can be dealt with without delay. The landing stages in towns of ordinary size will doubtless be erected

in the centre of the inner commercial districts. It will then be possible for business men to come direct to their offices from country districts some twenty-five or thirty miles out in the short space of half an hour. In very large cities, in London especially, it is questionable whether the responsible authorities will not do well, for reasons of public safety and convenience, to reserve a small area in the extreme centre of the commercial districts within which flying is prohibited, the landing stages in such cases being erected at intervals along the boundary line enclosing such area. There is a good deal to be said for such a restriction.

As an illustration of what is likely to take place when—it may be twenty years, it will certainly not be fifty years—aeroplane transit is established as one of the

ordinary forms of locomotion, let London be considered. As regards the housing of the aeroplanes, the necessary buildings will probably be erected, for the most part, well outside the present county area. The land on the south of the Thames beyond Woolwich will probably be found to be especially suitable for the erection of aeroplane sheds and workshops, as it is cheap, and materials, machinery, etc., may be conveyed to it by water. The question of the situation of the landing stages in the inner districts of London is a very attractive one for speculative thought. If flying is to be allowed without restriction over the whole of London, the obvious position for the principal landing stages will be along the Oxford Street and Holborn route, from the Marble Arch to the Bank, and on to Aldgate, this being the backbone of business



DOOR TO CHAPEL, QUEEN'S COLLEGE, OXFORD.
NICHOLAS HAWKSMOOR, ARCHITECT.

London. The Strand route, from Piccadilly Circus to the Bank, being next in importance, would, of course, be similarly served. But it is very questionable whether the erection of landing stages in the very centre of London should be allowed. The thought of fleets of aeroplanes converging on a landing stage at the Bank hardly suggests security. The tangle of traffic at the ground level at this point is sufficiently bad without the introduction of a further tangle in the air, with aerial police on point duty emulating the City police below. The reservation of a comparatively small area in the centre of London for ordinary surface and underground transit would tend to prevent any congestion of aeroplane traffic, with its obvious great dangers, and probable injurious effect on the subjacent locality. Such an area might be bounded on the north by the Marylebone, Euston, and Pentonville Roads, on the west by a line following the ordinary omnibus route from Chapel Street *via* the Marble Arch and Hyde Park Corner to Victoria, and extended to Vauxhall Bridge. On the south the river would appear to constitute the natural boundary, and on the east a line could be arranged to extend from the City boundary adjoining the river, through Aldgate to the Angel, Islington. It will be seen that even with our present means of locomotion any part of central London can be reached in less than ten minutes from some point on this suggested boundary line. The extra time in transit which such a restriction would involve is therefore comparatively trifling, and the little inconvenience would be very greatly outweighed by the advantage of having this clear area reserved in the centre of the metropolis.

LEGAL.

Responsibilities of Architects.

Sheriff J. P. Grant has issued his decision in the action in which the late Robert J. Macbeth, architect, sued William Beard more, of Flichity, Nairnshire, for £290, being the balance of remuneration for professional services in connection with the alterations on Flichity House. His lordship finds in fact that pursuer, in the exercise of his supervision as architect, allowed freestone of a colour and in a position disconform to contract to be built into the work, but that otherwise he duly fulfilled his duties of supervision; and in law that his executrix is liable to the defender in damages, which defender had claimed, in respect of the said freestone being disconform to contract; assesses the sum over and above the sum sued for at £200, for which sum he decerns in favour of the defender, and finds no expenses due to or by either party.

In his note, Sheriff Grant says an architect has no power to sanction deviations from the contract in anything that matters without the sanction of his client, even to make a better job. Doubtless in practice an architect often does so, and trusts to his client's subsequent ratification of his experience and knowledge, but he does so at his own risk. In the present case the architect's specifications provided that all stones for the dressings must be sound, hard, durable white rock, of uniform colour, and entirely free from all blemishes, such as iron-stones, clay-pits, and pebbles. In the surveyor's schedule it was provided that the freestone should be of the best liver rock, and be laid on their natural or quarry bed. If the surveyor had added general conditions to the schedule of quantities, his lordship could

not see how the architect could avoid responsibility for them. There could be no question on the evidence that the contract for the mason work on the combined specification and schedule was not properly carried out. The stones were not of uniform white colour, and many of them were not placed on their natural or quarry bed, and to remedy these deviations by replacing these stones would take a large sum of money.

With regard to the carpenter work, he believed that doors and floor were apparently right when passed by the architect, and subsequent defects might have been remedied afterwards if timeously disclosed, but he could find no reference to any complaint as to the woodwork before defender's agent's letter to the pursuer when the pursuer was practically deprived of the opportunity of seeing that latent defects were made good, and on this branch of the case his verdict was for the pursuer. By the contract the defender was entitled to expect freestone of uniform colour that could be reasonably called white, and was equally entitled not to have any stone on cant, though on the evidence his lordship doubted whether the house was any the worse for this deviation from the contract. In assessing the damage, he allowed for what he thought it would cost to make good this deviation, and he thought the sum of £200, in addition to the balance of fees unpaid, was as much as could be reasonably claimed.

Architect's Fees for Abandoned Plans.

In the Court of Passage, Liverpool, Archibald Leitch sued Ewing and Co., Ltd., and John Alexander Wilson, biscuit manufacturer, of Liverpool, for £150 in respect of fees for services rendered in the capacity of consulting architect and engineer.

The case for plaintiff was that early last year Mr. Wilson, at that time a principal of Ewing and Co., requested Mr. Leitch to prepare plans for the reconstruction of the factory situated in Strand Street. The preliminary plans were approved by Mr. Wilson, and plaintiff got out the bills of quantities and specifications, which Mr. Wilson retained. In November Mr. Leitch observed that the old building was being demolished. He made inquiries from Mr. Wilson, who informed him that he had given the work to someone else, as the tenders in respect of plaintiff's plans were too high. Mr. Leitch now claimed half fees for an abandoned contract. For the defence it was contended that plaintiff had gone far further than he was requested or expected to go. All that Mr. Wilson desired was an approximate idea of the cost of the alterations he thought of making. His Lordship gave judgment for the plaintiff for £150, less £80 paid into court.

OBITUARY.

Mr. Sydney Smirke, F.R.I.B.A.

The death occurred on June 5th, at Richmond, Surrey, of Mr. Sydney Smirke, F.R.I.B.A. It is remarkable that his grandfather, father, and uncle were Royal Academicians. He became a Fellow of the Institute in 1888, and served on the Literature Standing Committee. He was a member of the Council of the Architects' Benevolent Society, retiring in March, 1909.

Mr. E. J. Milner Allen, A.R.I.B.A.

We regret to have to announce the death (from pneumonia after a few days' illness) of Mr. Edmund John Milner Allen, aged

fifty-two. After studying at the Royal Academy, where he was a Silver Medallist in 1880, Mr. Allen was elected an Associate of the Royal Institute of British Architects in 1882 (extra Silver Medallist, Soane Medallion, 1883), and commenced practice in 1884. In addition to numerous works executed, both alone and with the late Mr. Arthur B. Gibson, he was joint architect, with Mr. J. W. Simpson, for the Liverpool City Hosnital (south), the Victoria Institute, Worcester, the Glasgow Fine Art Galleries, Kelvingrove Park, and the Cartwright Memorial Hall, Bradford.

Mr. Robert Morham.

Mr. Robert Morham, formerly architect of the City of Edinburgh, who died recently at his residence, 13, Lauder Road, Edinburgh, was born in Edinburgh in 1839, and was a pupil of the late Mr. David Rhind. After three years spent in the office of the late Mr. David Bryce, he came to London, where he was associated for four years with the late Mr. W. E. Nessfield. In 1866 he returned to Edinburgh and became chief assistant to the late Mr. David Cousin, then City Architect. Mr. Morham was appointed City Architect in 1873, and held the office until his resignation in 1908. The old City Chambers were enlarged from his designs, and he was the architect for the Corporation's Hospital for Infectious Diseases. He did much work in connection with the reconstruction of the North Bridge, and designed the Waverley Market and the Central Fire Station.

Mr. Charles R. Wells.

The death took place last week at Newcastle of Mr. Charles R. Wells, a retired builder and contractor, who had reached the advanced age of eighty-two years. Mr. Wells was eminent on the bowling-green, and took part in the match with the Australians when they visited Newcastle in 1901.

Mr. Henry F. Williams.

Mr. Henry Joseph Williams, who died at Brislington on June 7th, had designed the Law Union and Rock Insurance Company's offices in Bristol, and several branches of Lloyds Bank, but had been chiefly occupied as a valuer, his knowledge as to the value of property in the city and district having marked him out for retention in many important arbitration and law cases. He was born in Bristol in 1842.

Mr. F. Hildrey.

The death has occurred, in his fifty-fifth year, of Mr. F. Hildrey, a partner in a well-known Sunderland firm of builders and contractors. For many years he had been associated with his brother in large building contracts in the town. Latterly he had devoted himself to developing the large Valebrooke estate, Sunderland.

DETAILS OLD AND NEW.—XLIV.

Chapel Door, Queen's College, Oxford.

Hawksmoor's best work is to be found at Queen's College, Oxford, and the chapel door is a representative example of it. The mouldings are good—especially the bold architrave—and the working-in of the circular light over the door is a clever piece of design. All is of stone. The chapel was built about 1714. Owing to the fact that the entrance is in the "tunnel" connecting the first and second quadrangles, it is impossible to take a photograph of this doorway other than at an extreme angle. With the drawing reproduced on page 634, however, all purposes are served.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

The Craze for Speed.

Reinforced concrete construction has introduced into the building industry much more of orderliness and method and much more of scientific observation than it knew before. Precision is now becoming a craze, and there are those who fear that it may become a tyranny. It is in America that the symptoms of over-development are most common. There they seem to do everything in a hurry. They no longer speak with what was once their characteristic drawl, which has been superseded by breathless rapidity of staccato utterance. They have invented the quick lunch and the fascinating phrase, "To get rich quick." They have also current the beautiful saying, respecting the avoidance, by pedestrians, of high-speed motor-cars, "If you ain't quick you're dead." They have instituted quick divorce. They build quick ("quickly" being too slow a word for them), and they want to build quicker. To this end they are taking observation and publishing books.

Concrete Costs.

It may be remembered that, some time back, we reviewed a book, by Mr. Frank B. Gilbreth, on motion study as applied to the laying of bricks. The reviewer greatly admired the industry and thoroughness with which the author had made his observations and worked out his conclusions, but ventured to doubt whether human nature was tough enough or tame enough to stand it all. The same misgiving haunts us persistently as we glance through the elaborate book on "Concrete Costs: Tables and Recommendations for Estimating the Time and Cost of Labour Operations in Concrete Construction, and for Introducing Economical Methods of Management." The book is by Mr. Frederick W. Taylor and Mr. Sanford E. Thompson, and is published in New York by Messrs. John Wiley and Sons, and in London (price 21s. 1d. net) by Messrs. Chapman and Hall, Ltd. It will be rightly inferred from the title that the motion study element is subordinate to the main purpose of the book, which is "designed to meet the needs of the contractor, as well as of the engineer and architect," by "the treatment of unit times and costs of concrete construction from the standpoint of rough approximate estimates; of accurate detailed estimates; of economical layout of work; and of scientific management with task and bonus." The times and costs are based usually upon average conditions and average workmen, instead of on scientifically managed operation, "because at the time of the issue of this first edition the application of scientific management to construction work has but barely begun, and cannot furnish adequate material for extended study on that basis."

Divergent Conditions.

The costs are naturally worked out in dollars, and the unfamiliar currency at once places the British reader at some disadvantage, which, however, could be easily overcome by the simple expedient of using a table of equivalent values. But this is obviously a small matter compared with the almost insuperable difficulty of accurate readjust-

ment for the apparently irreconcilable differences between American and British conditions of labour, rates of wages, standards of living, national temperament, supply and quality of materials, business methods, professional training and practice, and other matters upon which wide divergency is possible and actual. But while any attempt to adopt in detail for use in this country the tabulated results of American practice would seem to be quite hopeless, there are many data that are interesting, if not exactly instructive, by reason of their regular or their varying inter-relationships or relative ratios. Even these may not always be safely assumed to be independent of special conditions; and, in fact, as the authors acknowledge, "from the standpoint of the contractor, it is unfortunate that no two jobs are exactly alike; and in most cases the difference in the conditions of apparently similar jobs is so great that the records of the time and cost of one job enable the estimator merely to make a good guess at the cost of the next."

"Unit Times."

The authors imagine that they have discovered a way out of this seeming impasse. They believe that, for obtaining the best knowledge of the time required for doing concrete-construction work, there is a better method than that of simply keeping records of the pay and of the time of gangs or workmen. It is claimed that "a far more accurate plan for estimating costs is the method adopted in this book of dividing each kind of work into a series of small elementary operations, and of then timing and recording each of these 'unit times,' and, finally, of adding together the proper series of unit times in figuring the cost of a new job. This method is new in the building trades, although it has been successfully practised for years in many large machine shops and in engineering and manufacturing establishments."

Study with a Stop-Watch.

Mr. Taylor, when foreman in a machine-shop, found that most of his many troubles with the men arose from the fact that neither he nor they knew how long a given job ought to take, "and then he studied with a stop-watch the time which a first-class man should take to make each of the elementary movements into which all kinds of work may be sub-divided. By adding together the proper series of these 'unit times,' the correct speed for doing any kind of work was obtained." Mr. Thompson, the joint author of the book, joined him in an effort to apply these principles to the building trade. Approximate costs of reinforced-concrete buildings are deduced in terms of cost per square foot of floor surface. The tables and curves cover a wide range of areas and types of buildings, and the values include all miscellaneous details, such as windows, stairs, lifts, etc., giving a general idea of the probable cost of a contemplated building, and also a means of comparing the cost of different designs.

Economising on Cement.

The proportioning of concrete is exhaustively considered, an entire chapter being devoted to it. For large jobs, it pays to make

thorough preliminary studies of the aggregates; the materials being carefully graded with the object of reducing the necessary cement to the minimum quantity; for "by adjusting the proportions of the aggregates instead of selecting them arbitrarily, a concrete of equal density, strength, and watertightness may be made almost always with the use of less cement." The voids in sand and broken stone may be determined simply by weighing the material, and then finding the percentage of moisture by weighing the moist sand, then drying it in an oven at a temperature of at least 212 degrees Fahr. until there is no further loss in weight. The dried sand is then weighed, and the loss in weight is expressed as a percentage of the total weight of the moist sand.

Handling Materials.

Almost every page of the book contains useful suggestions as to the more economical handling of material; and the general impression left on the mind is that while it would, for various reasons, be impracticable to go to the extremes of vigilance that make up what is necessarily a counsel of perfection, valuable guidance is afforded towards the quite attainable object of getting much nearer the mark than would be possible without a steady and systematic attempt towards economy in each and all of the formidable number of details on which slight loss or slight gain may be effected, according to the efficiency or the slackness of the management. For the American reader, the very numerous and most laboriously compiled tables will be of invaluable assistance. In this country they may be of but little direct utility. Here, what will be most highly esteemed is the patient and complete marshalling of the data of reinforced-concrete construction, the close scrutiny of each item, and the practical deduction that is evolved. It is in the right spirit of the watchful supervision that is essential to sound work in this particular field; and here it is hardly necessary to add the caution that, after all, strict economy is a much inferior consideration to a strict regard for absolute safety; and for that reason the practitioner will always be careful to avoid cutting things too fine. He will always provide a fair margin of safety. Ignorance may have made that margin much too wide—or, in some instances, too narrow; but on the whole it may be safely said that, in this country, reinforced-concrete construction is still attended by much unnecessary waste; and careful attention to the facts set forth in this book should help to reduce it very materially.

"Motion-Study" Again.

With regard to the question of time-saving and labour-saving through motion study, the present moment is rather inopportune for its calm consideration. The existing "labour unrest" excludes, for the moment, any attempt to throw into the arena what would be instantly pounced upon as an additional cause of irritation. If there is one thing more prominent than another among the "present discontents" of labour, it is the bitter antagonism of the men towards the

systematic extraction of the last ounce of energy that they are capable of yielding under American methods of "scientific" exploitation. They are moving heaven and earth with the object of establishing their claim to be regarded as men, not as machines; and if they are to be won over to superior methods, it will first be necessary to convince them that their humanity is properly recognised and respected, and that their claim to a share in the advantages of intensification will not be ignored. The rank and file of the concrete workers in this country are, on the whole, a skilful and dependable body of men; and any attempt to hustle them would immediately result in much more harm than good.

KNEE-BRACED ROOF TRUSSES.

Effect of Reactions upon Wind Stresses.

BY EWART S. ANDREWS, B.SC.ENG. (LOND.).

In designing roof-trusses for workshops, sheds, etc., it is very common to provide knee-bracing to give lateral strength against the wind. The calculated stresses in such a truss, however, depend upon the assumptions which are made with regard to the reactions, and it is the aim of this article to show how much is the variation for various methods of treating the reactions. We will take one example and find the wind stresses for the following assumption as to the reactions:—

- 1. Reactions act at junctions of knee-braces and columns.
- 2. Reactions act at half the distance between the junctions and the bases of the columns.
- 3. Reactions act at the bases of the columns.

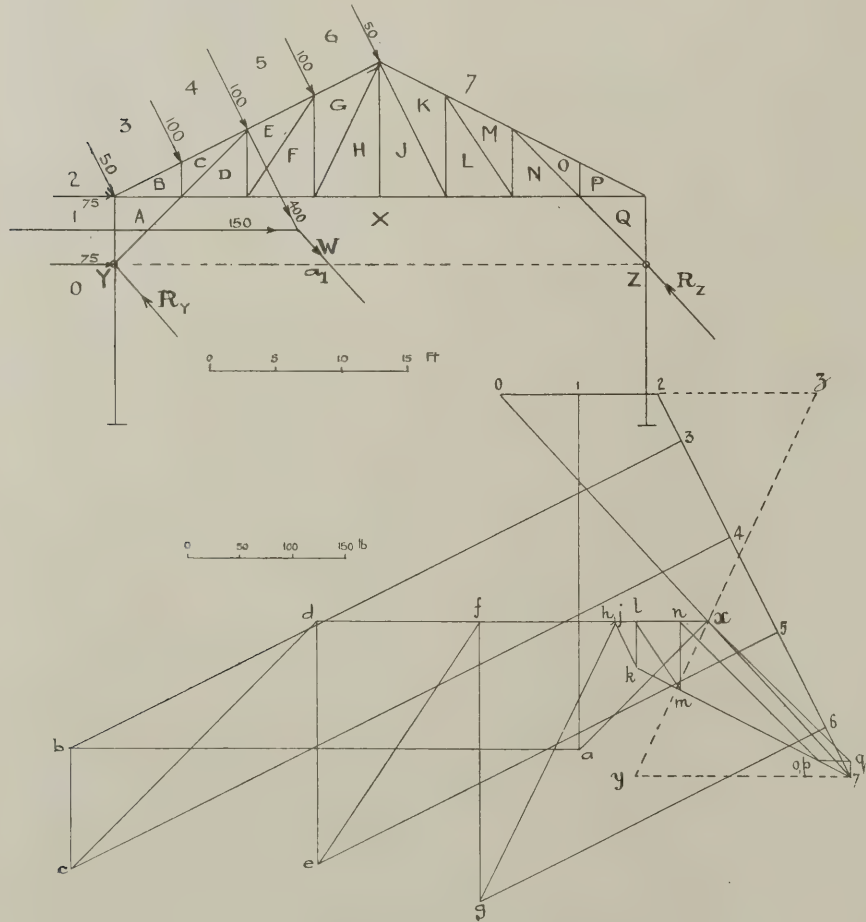


FIG. 1.—LOADS AND DIAGRAMS FOR CASE I.

Case I.
This assumption is, according to the writer's experience, the usual one adopted in this country, each reaction being taken as parallel to the resultant wind force. Fig. 1 shows the roof truss and stress diagram for this case. The span is 40 ft. and the rise 10 ft.

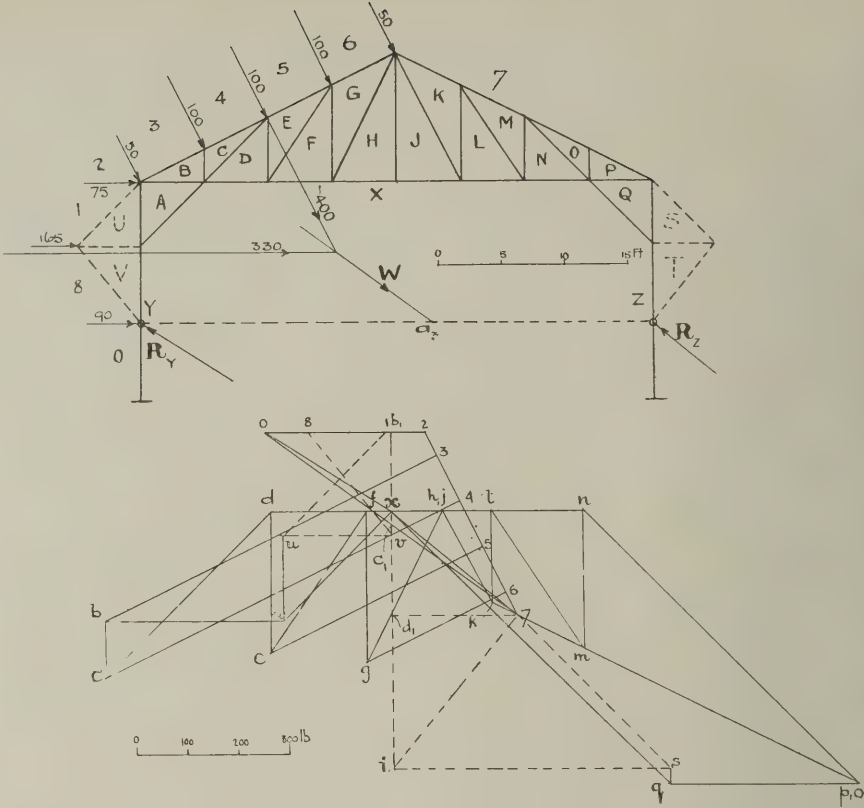


FIG. 2.—LOADS AND STRESS DIAGRAM FOR CASE II.

Taking a wind pressure upon a vertical surface of 30 lb. per sq. ft. and considering the stresses per foot apart of the principals, we get from the usual wind-pressure tables:—
Wind pressure per square foot of rafter = $59 \times 30 = 17.7$ lb. . . Total wind force on rafter = $17.7 \times 22.36 = 400$ lb. nearly.

This is divided up as indicated in Fig. 1. On the side we have a wind pressure = $30 \times 5 = 150$ lb., which is divided up as shown.

These forces are then set out on the stress diagram $o\ 1\ 2\ 7$, as shown, and by joining $o\ 7$ we get the resultant wind load W .

This acts through the intersection of the rafter load of 400 lb. and the side load of 150 lb., and the resultant load is drawn parallel to $o\ 7$ to intersect the line joining the reaction points $Y\ Z$ at the point a_1 . The line $o\ 7$ is then divided at x , so that

$$\frac{ox}{x7} = \frac{a_1Z}{Ya_1}$$

This may be done by drawing $o\ z$ horizontally equal to a_1Z and $7\ y$ also horizontally equal to $Y a_1$ and joining across. Then $7\ x = R_z$ and $x o = R_v$.

The stress or reciprocal diagram is then drawn without difficulty as shown, and the results will be given in tabulated form later.

This method is not very accurate.

Case II.
The reactions in this case are taken as acting half-way between the junction of the knees and columns and their bases, this assumption being very nearly correct in the case where the bases of the columns are absolutely fixed in a vertical division.

Each reaction is taken as resisting equally the horizontal component of the resultant wind force.

The roof-truss and forces acting on it, together with the stress diagram, are shown in Fig. 2, the stress diagram in this case being drawn to half the scale adopted in the previous case in order to save space.

The wind force on the rafter is, as before, 400 lb.; on the side we have a wind force of $30 \times 11 = 330$ lb., which is divided up in proportion to the lengths as shown. Before we can proceed with the stress diagram in this case we must assume some additional bracing to take the bending stresses in the column. This additional bracing may be assumed to be of any form, and a suitable one is shown in dotted lines.

The wind forces are then set down on the stress diagram $o_8, 1_7$ as shown, and by joining o_7 we get the resultant wind force W , which, as before, acts at the intersection of the vertical and horizontal wind forces, and in this case intersects the line YZ in the point a_3 .

To get the reactions, we bisect the line o_7 at the point c_1 and draw through this line a vertical $b_1 d_1$ to the horizontal lines

through o and 7 ; $b_1 d_1$ is then divided at the point x , so that

$$\frac{b_1 x}{x d_1} = \frac{a_3 Z}{Y a_3}$$

and this may be done graphically as in the previous example.

Now join $7x, x o$, then

$$7x = R_z; x o = R_y.$$

Starting at the point 8 on the stress diagram we then draw a dotted line $8v$ parallel to $8V$ to meet the vertical through x in v and then draw vu horizontally to u to meet a line through the point I parallel to $I U$; then draw ua vertically and xa parallel to XA to give the point a and the stress diagram can then be completed in the usual manner without much difficulty.

As will be shown later, the stresses in

many of the bars in this will be very different from those obtained in Case I. As we indicated above, the absence of the bracing shown in dotted lines causes bending stresses in the columns.

This bending stress is greatest on the leeward side, and the maximum bending moment is equal to the horizontal component of the reaction R_z (i.e., $7 d_1$) multiplied by half the distance from the base of the column to the junction with the knee brace.

If the columns at each side are very securely bolted down, this treatment is much more accurate than that given in Case I.; if the fixing of the columns is not to be very strongly relied upon, then the more correct treatment is to take the conditions assumed in Case III.

(To be continued.)



THE ETON MEMORIAL: VIEW OF LIBRARY SHOWING DOME.
LAURENCE K. HALL, F.R.I.B.A., AND SIDNEY K. GREENSLADE, A.R.I.B.A., ARCHITECTS.
WHITAKER, HALL & OWEN, CONSULTING ENGINEERS.



THE ETON MEMORIAL: STEELWORK OF DOME.

THE DOME OF THE ETON
MEMORIAL.

The Eton Memorial was erected in 1906 in memory of the Old Etonians who fell in the Boer War. It comprises a great hall, a museum, and a library surmounted by a dome, the construction of which is shown by the accompanying illustrations. The library is an octagonal building, nearly

60 ft. in diameter, the dome being circular on plan and having a diameter of 44 ft. It is carried on stanchions clear within the walls, springing at 36 ft. above the ground and rising 31 ft., the crowning lantern adding a further 15 ft. to the height. The outer covering of the dome is of lead on boarding, the ceiling being of fibrous plaster attached to the lower chord. The steel framing is designed to fit both the

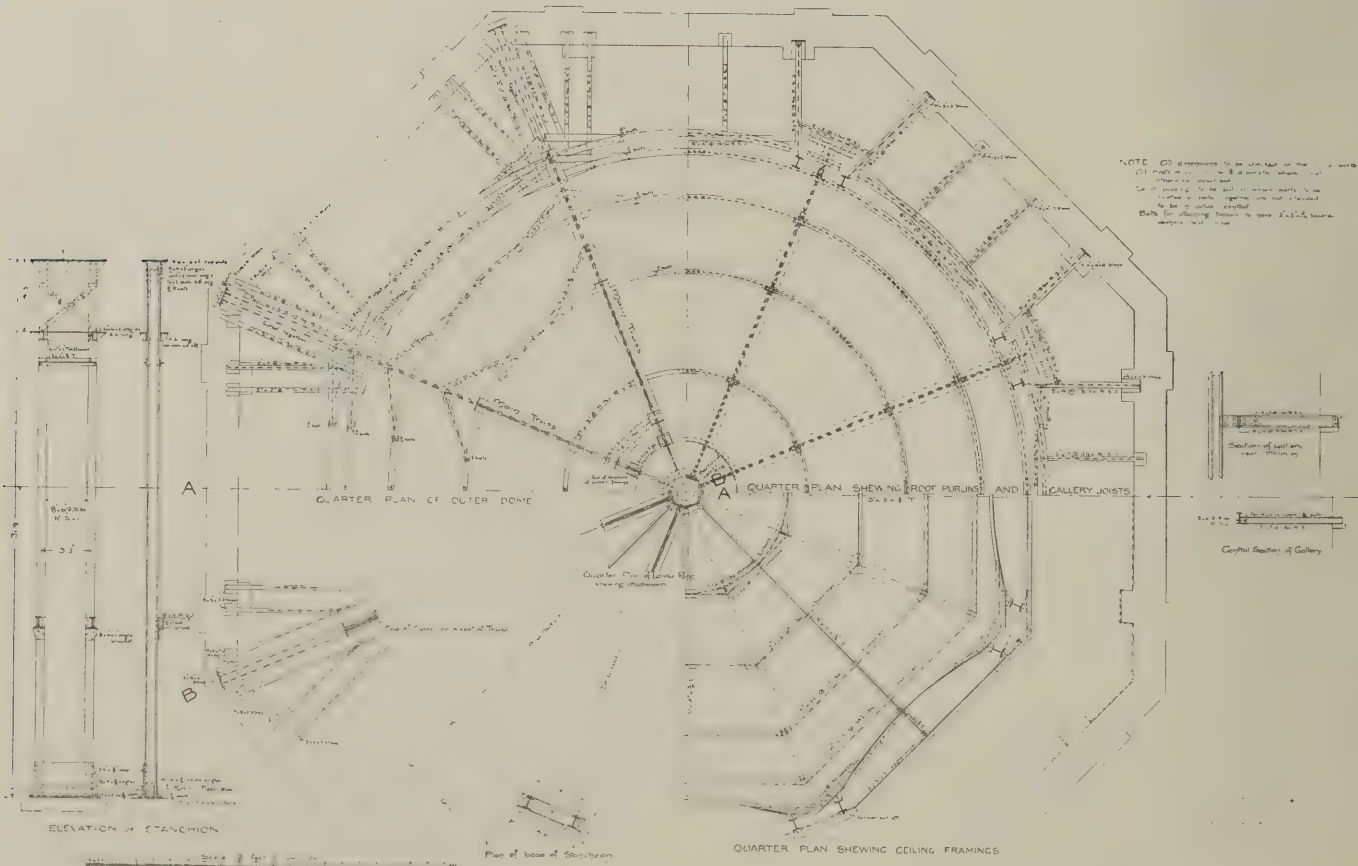
external contour and the ceiling of the library, which is also domed, but in a different form. An opening is provided in the centre for ventilation, and provision is made for attaching a pendant. The framing contains about sixty tons of steel, all of British manufacture, and it is calculated to exert no thrust on the walls.

The architects were Messrs. L. K. Hall and S. K. Greenslade, the consulting engineers being Messrs. Whitaker, Hall, and Owen. The steelwork was carried out by Messrs. Matthew T. Shaw and Co. The general contractors were Messrs. Henry Willcocks and Co., of Wolverhampton.

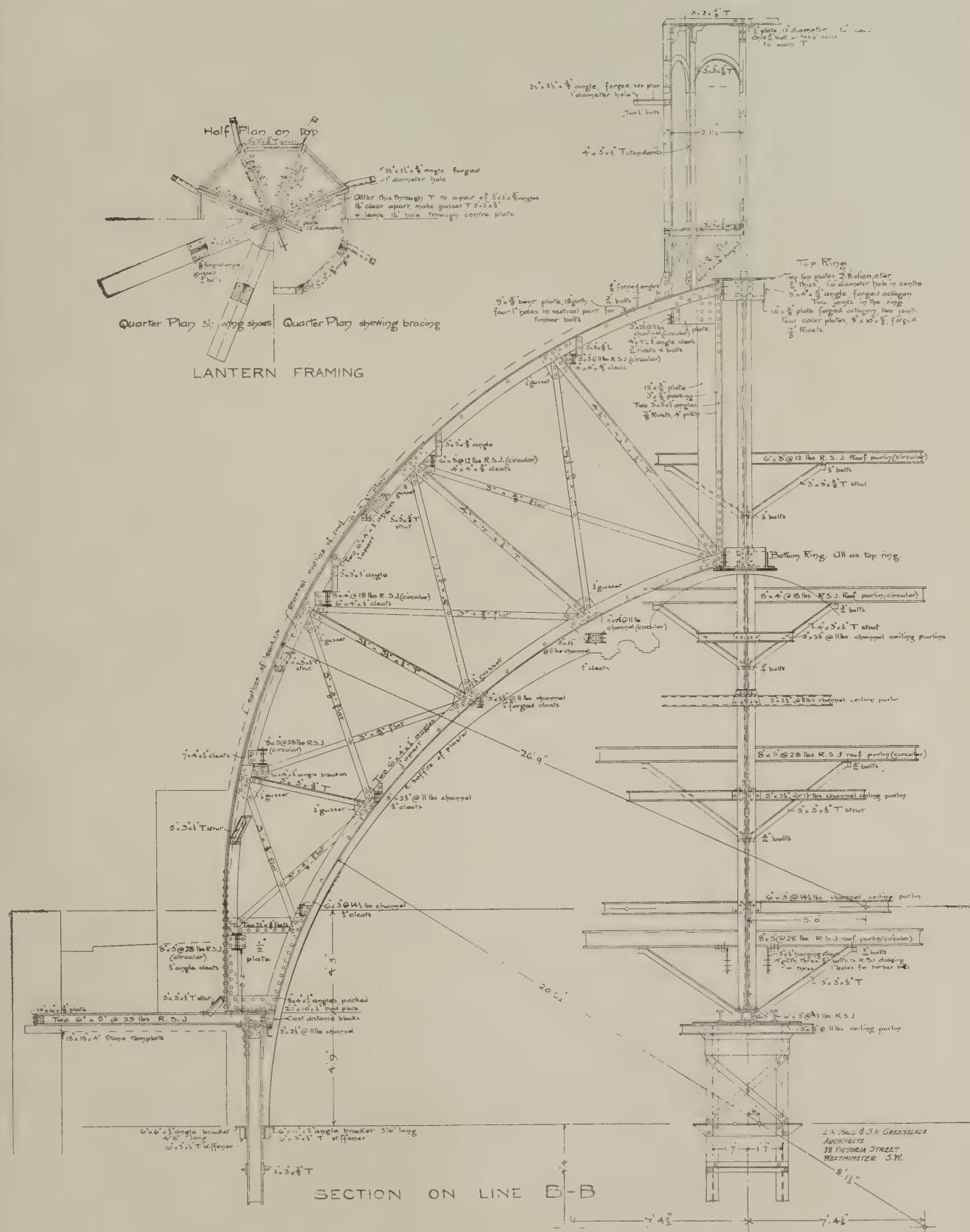
BY-LAW AS TO BUILDINGS OF STEEL
OR IRON FRAMEWORK.

The Local Government Board has provisionally approved the following by-law proposed to be made by the Chelmsford Town Council with respect to new buildings to be constructed with steel or iron framework:—

“From and after the date of the confirmation of this by-law every wall of a new public building or of a new building of the warehouse class which shall be constructed with steel or iron framework and in accordance with the following requirements:—(a) The framework shall be of sufficient strength to secure the due stability, and shall be properly put together; (b) The framework shall be filled in with bricks, stone, good cement concrete, or other hard and incombustible material properly and solidly put together, and of such thickness as shall be necessary to secure due stability to such filling;—shall be exempt from the operation of the by-laws numbered 10 to 34 in the series of by-laws with respect to new streets and buildings which was made by the mayor, aldermen, and burgesses of the Borough of Chelmsford.”



THE ETON MEMORIAL: DETAIL OF STEELWORK IN DOME.



THE ETON MEMORIAL: DETAIL OF STEELWORK IN DOME.



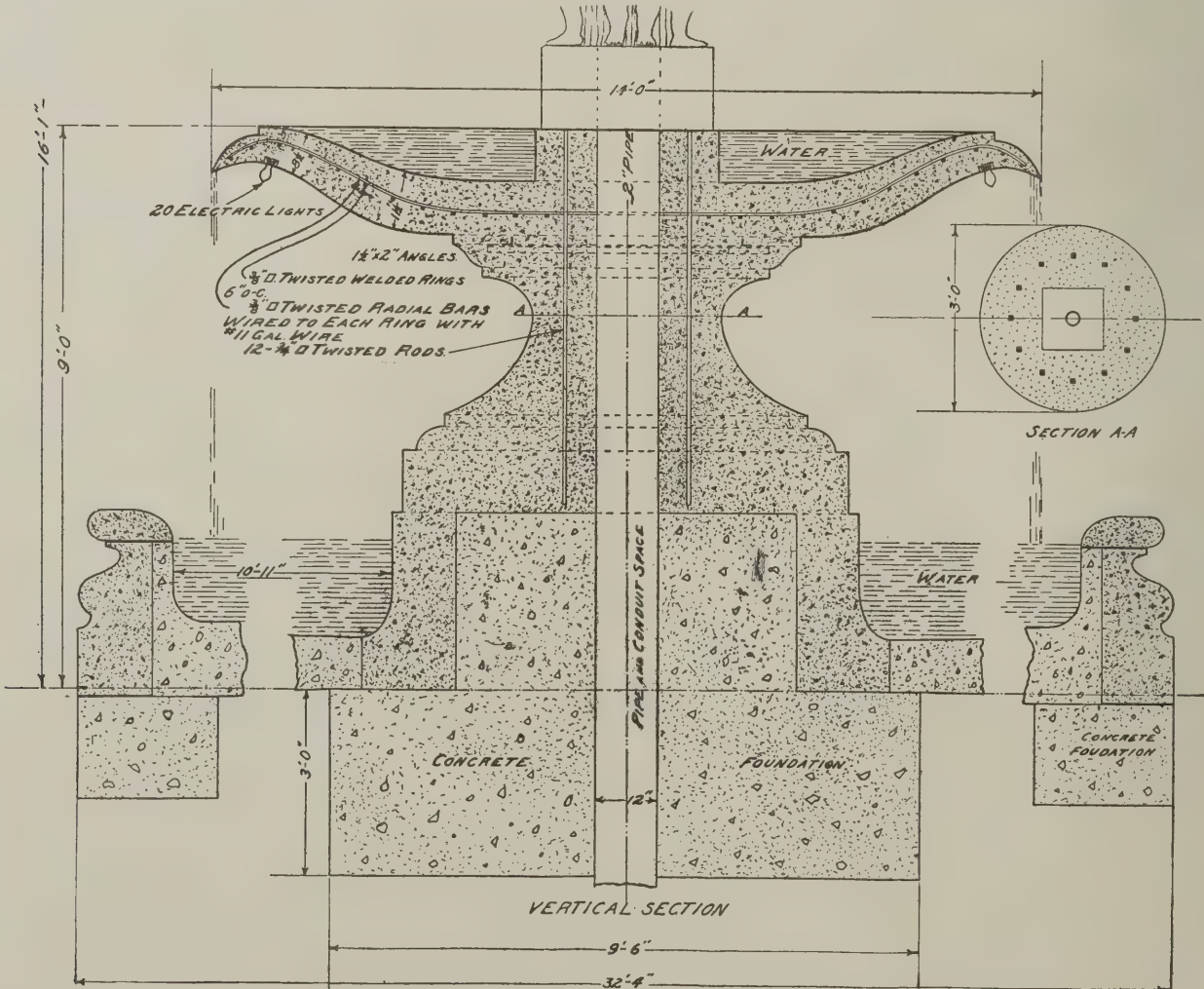
CONCRETE FOUNTAIN IN CENTRAL PARK, LOS ANGELES.

A CONCRETE FOUNTAIN.

That concrete lends itself with considerable kindness to artistic treatment only an extremist would deny. Any failure of æsthetic effect may be generally attributed to other causes than the unsuitability of the material; bad design, for instance, in the sense of imperfect adaptation to the idiosyncrasies of concrete. The material has a character that is all its own; and it is very doubtful whether as yet there is an effective understanding of its behaviour in the working or of the resultant effects. The conservatism of artists, and their reluctance to accept a new medium, has cast an undeserved stigma on all forms of concrete,

and has prevented that earnest and thorough study which might result in the full revelation of its possibilities and its limitations—of the treatment to which it sympathetically responds, and of that against which it sullenly rebels. What can be done with it, and what should not be attempted, have yet to be definitively discovered. Tentative essays in this direction usually err through the very natural adoption of methods that are more appropriate to other materials. In the illustrations, for instance, here shown of the concrete fountain in Central Park, Los Angeles, the pedestal and basin differ but little in form from what might have been expected if

they had been sculptured in stone. This is quite the normal course. It is invariably the case that the newer medium is at first treated in close imitation of the older, and the right method is only discovered through a necessarily slow process of trial and error—something in the nature of evolutionary development. With regard to the question of durability, the sculptor, loving to imagine that his work will endure for many generations, distrusts a material that is more plastic and tractable than bronze or stone; than which, nevertheless, it is probably more permanent, and is certainly more easily kept in repair. A concrete fountain erected in Wade Park, Cleveland, Ohio, some thirty years ago is reported as being still in good condition; and it will not be denied that the cement of to-day, being of vastly superior manufacture, gives both greater facilities in the working and more assured promise of durability. There can be no doubt that in this country, as in America, the love of statuary is rapidly increasing commensurately with the demand for parks and open spaces. Where the cost of bronze and stone is prohibitive, cement statuary will often be adopted; and it may be anticipated that artists will not disdain to work in it as they come to realise that it is not really a mean medium when its character is really understood, and when, consequently, it can be treated with sympathetic candour, not as imitation stone, but as a separate entity having its own distinctive characteristics and pretending to be nothing more nor less than what it is—less noble and costly, perhaps, than bronze or stone, but nevertheless deserving to be regarded as something better than a sham.



CONCRETE FOUNTAIN, LOS ANGELES.

REINFORCED CONCRETE COAL STORE AND GANTRY, ROCHDALE GASWORKS.

The Rochdale Corporation having decided to erect an installation of vertical retorts, the question arose as to the most economical method of conveying the coal to them. There is no railway connection with these works, and all the coal would have to be carted from the railway company's sidings. A high-level entrance and gantry to the works already existed from the main road to the existing retorts, and the corporation decided to construct a similar one to supply the new settings of retorts, but in this instance they adopted reinforced concrete in preference to masonry or brickwork. The accompanying illustrations show the work. It will be noticed on section D A B (Fig 1) that there is a difference in level of 32 ft. between the gasworks yard and the main road, which gives that depth of room in the coal store.

The work consists of a coal store averaging 106 ft. by 48 ft. by 32 ft. high, and a gantry forming a high-level roadway between the top of the store and the existing high-level roadway mentioned above. The length of the new roadway is 175 ft., and the width of decking is 40 ft. The general arrangement is shown in Fig. 1.

The floor of the coal store consists of a reinforced concrete slab 6 in. thick (which forms a raft to distribute the loads from columns), with 16 in. by 12 in. secondary beams, 10 ft. span, spaced at 5 ft. 6 in. centres, and 26 in. by 14 in. main beams 16 ft. span, all reinforced with Kahn trussed bars and Kahn rib bars.

The vertical walls resisting the outward pressure from the coal vary from 6 in. thick at the bottom to 4 in. thick at the top. They are supported laterally by 14 in. by 8 in. horizontal beams of 10 ft. span, the reactions of which are transmitted to framed trusses 16 ft. deep composed of 12 in. by 8 in. struts, the ties varying from 12 in. by 8 in. to 9 in. by 6 in. at the top. All the members are reinforced with four Kahn rib bars and 3-16 in. diameter wire ties spaced 9 in. apart. The two vertical booms, which also act as columns supporting the floor over the store, are 12 in. square, reinforced similarly to the struts. The internal boom



FIG. 3.
GENERAL VIEW FROM BELOW.

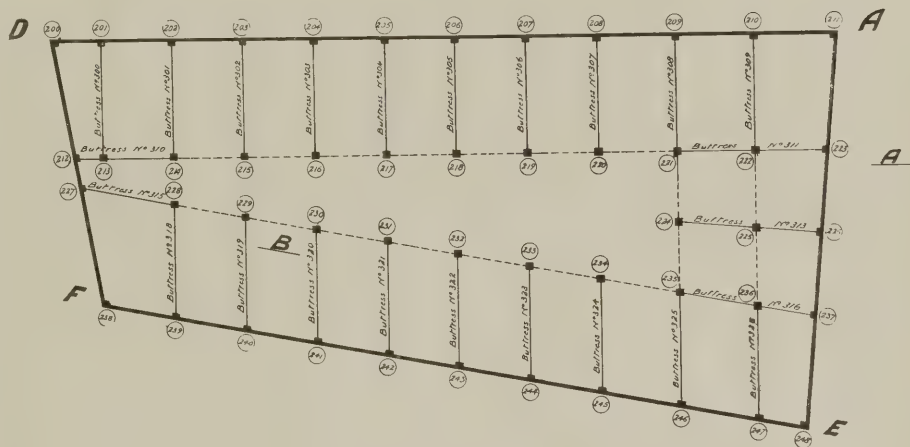


FIG. 2.
PLAN SHOWING POSITIONS OF COLUMNS AND BUTTRESSES.

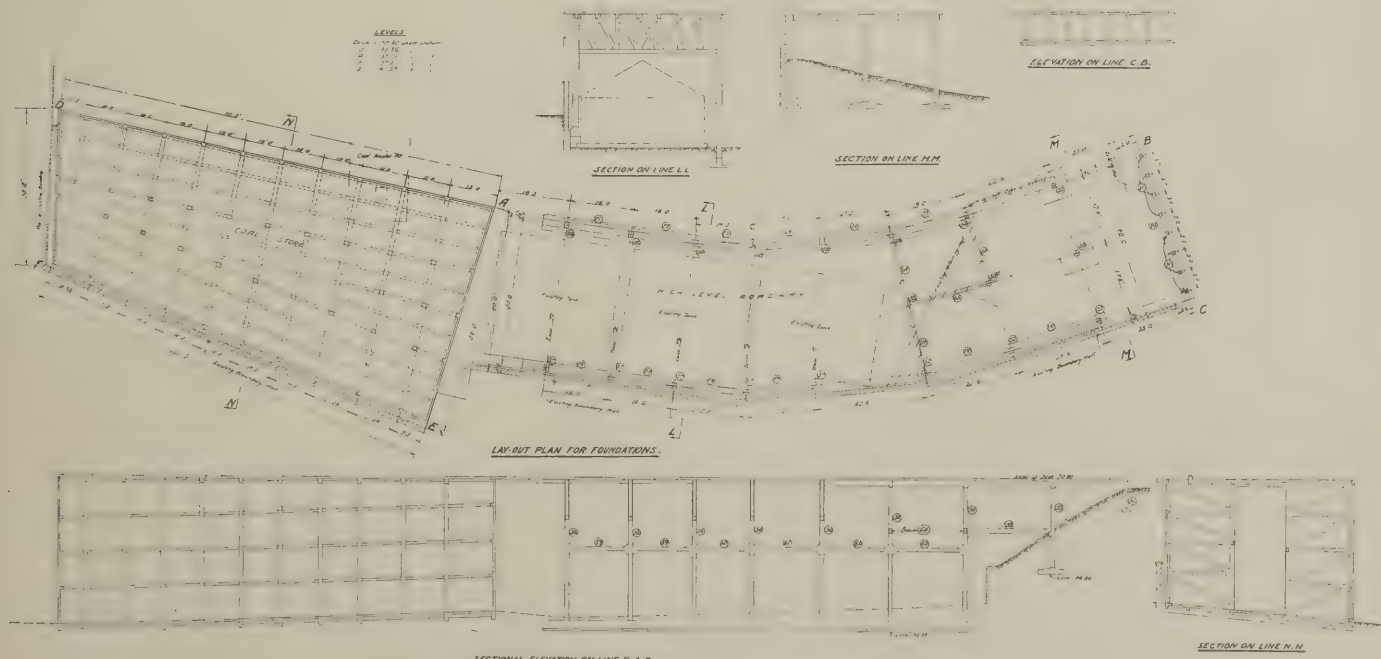


FIG. 1.
COAL STORE AND GANTRY, ROCHDALE GAS WORKS.

is stiffened by 12 in. by 8 in. horizontal braces splayed to the same at the junctions. It would have been more economical to have designed the main vertical members of the wall as beams tied at top and bottom and say at the half depth, but owing to the possibility of the coal being banked up on one side wall only it was decided to construct the sides as independent retaining walls. The construction described above is clearly illustrated in Figs. 2 and 3.

The floor over the coal store is constructed with a 6 in. decking slab supported on 14 in. by 9 in. secondary beams, spaced on an average of 5 ft. 6 in. centres

and carried on 20 in. by 12 in. main beams at 10 ft. centres and 16 ft. span. The depths of the beams in all cases include the thickness of the decking slab.

Openings 9 ft. by 5 ft. are formed in outside panels of the floor to allow the coal to be tipped from the carts into the store, a 12 in. by 12 in. concrete curb being provided to form a stop-block for the cart wheels.

The gantry connects the floor over the coal store with the existing high-level road, as described. For three bays from the high-level road it is supported on 16 in. by 12 in. outside columns, spaced 22 ft. apart, with one internal column

16 in. square, thus making the main beams, which are 28 in. by 14 in., about 18 ft. span.

The decking is 6 in. thick and the secondary beams are 24 in. by 12 in., spaced 5 ft. centres. Owing to the unsatisfactory nature of the ground, it was considered advisable to support the columns on continuous base beams in order to spread the load over as large an area as possible. A typical column base is shown in Fig. 4.

In the remaining portion of the gantry the centre column could not be constructed owing to the existing cast-iron tanks, which it was impossible to remove. Consequently the main beams had to span the

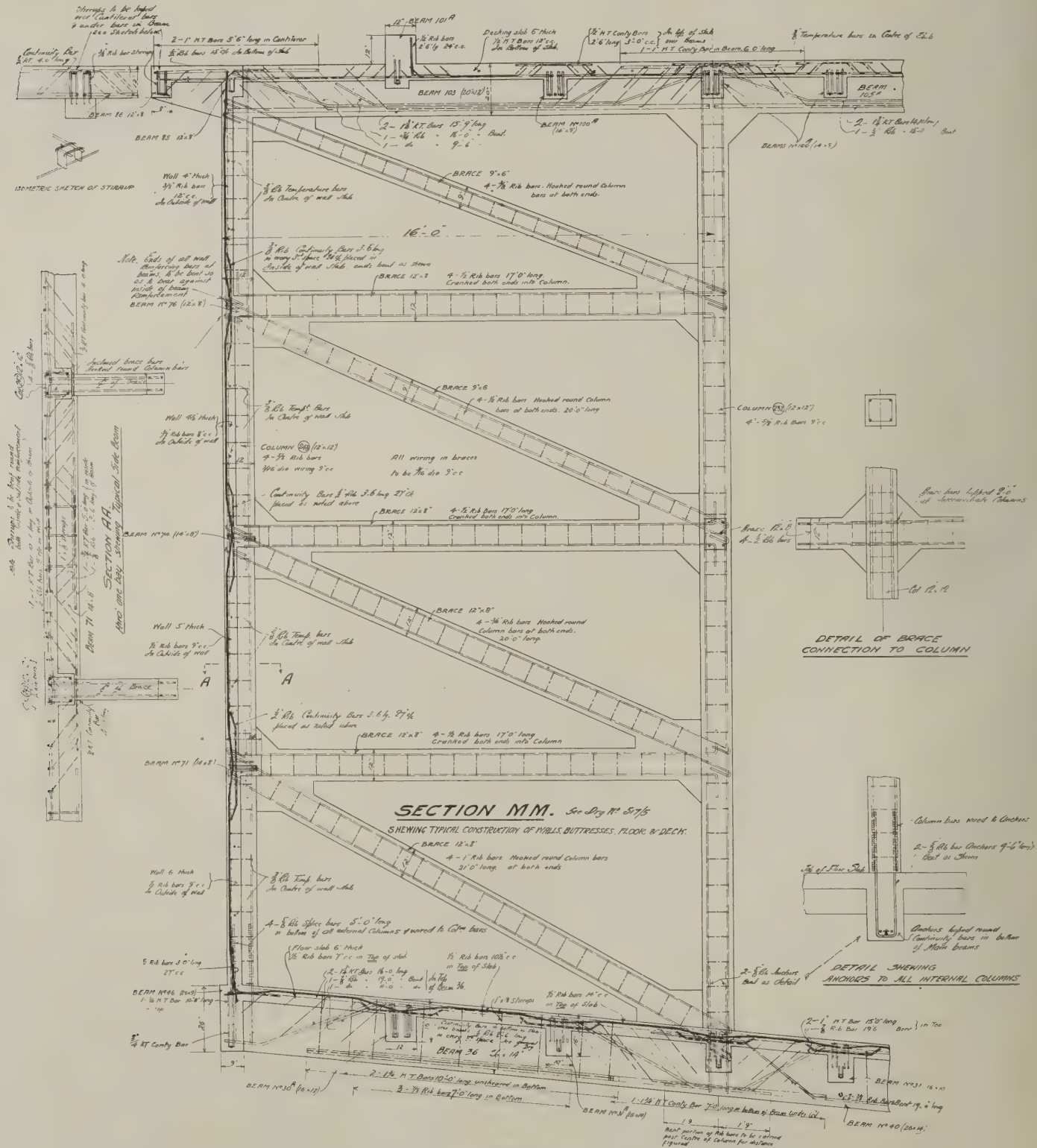


FIG. 4.

COAL STORE AND GANTRY, ROCHDALE GAS WORKS: SECTION SHOWING TYPICAL CONSTRUCTION OF WALLS, BUTTRESSES, FLOOR AND DECK.

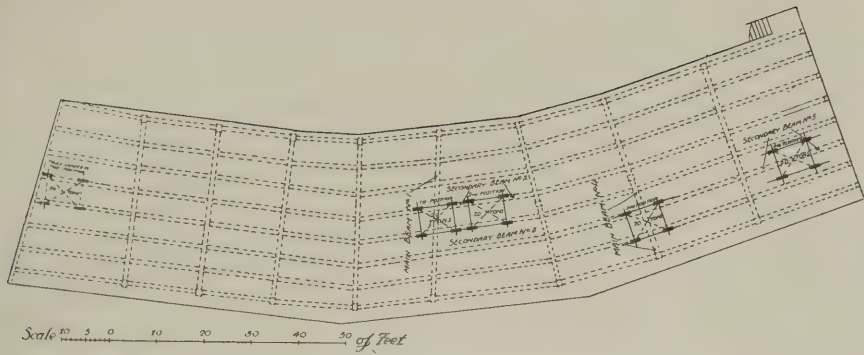


FIG. 7.—DIAGRAM SHOWING FOUR POSITIONS OF TEST LOAD.

whole width of the gantry between the outside columns. To reduce the dead weight of the construction as much as possible, the beams were designed as N-type girders 10 ft. deep, as headroom was not a governing factor. The bottom or tension boom is 12 in. by 12 in., the web struts and ties are 10 in. by 10 in., the compression boom is 16 in. by 12 in., and the slab for a width of 12 in. on each side of same is calculated as assisting the boom to resist the compressive forces. The whole of the reinforcement of these girders consists of Kahn rib bars, with 3-16 in. diameter wire ties spaced from 12 in. to 6 in. apart. Some of the bars in the tension boom had to be 50 ft. long in order to avoid welding or splicing.

The outline of one of these trusses is shown in Section LL, Fig. 1.

The great length of the construction necessitated provision for variations in temperature; this was provided by an expansion joint between the gantry and the coal store. Brackets were formed on the columns in the end wall of the store to take cross-beams supporting the secondary beams of the last bay of the gantry, two layers of oiled paper being placed on bracket before concreting the cross beams, which were cast so as to leave a space of 1/2 in. between the gantry and the coal store. A continuous asphalt dowel covered the top of the space to exclude dirt and sludge.

The parapet wall to the gantry was constructed in brickwork resting on the decking slab, which is cantilevered over the outside beams about 1 ft.

A slate roof supported on steel trusses was constructed over the coal store, and the surrounding walls were built of brickwork with openings for ventilation.

The gantry and floor over the store is paved with 6 in. granite setts laid on a 3-in. thick bedding material.

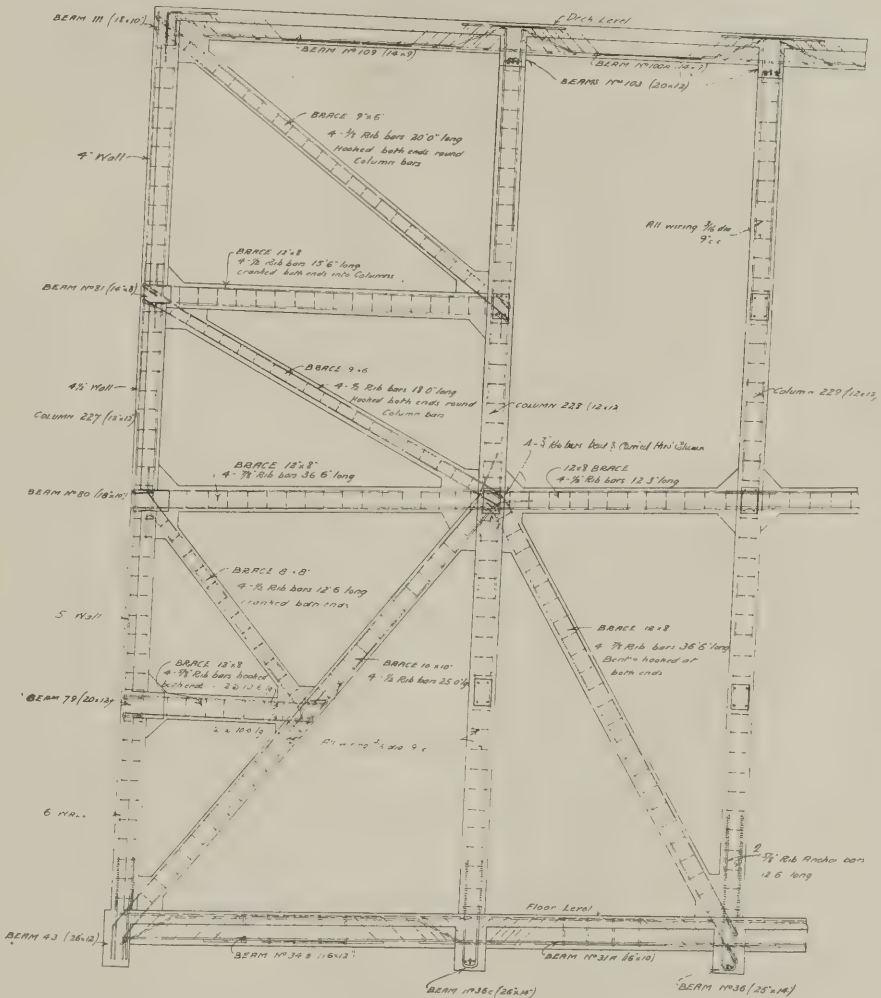
Description of Test.

On February 28th, 1912, the high-level roadway was subjected to the following test: A truck having a wheel base 7 ft. 8 in. long by 5 ft. 8 in. wide, the width of the wheel tyres being 9 in., was loaded to a weight of twenty tons in the position indicated on the extreme left of

the diagram. The test load was drawn across from left to right, the deflections at the four positions shown on the diagram being as follows:

- Main Beam No. 1 (first position of load) = 3/8 in.
- Secondary Beam No. 2 (second ditto) = 1/4 in.
- Secondary Beam No. 3 (ditto ditto) = 1/8 in.
- Main Beam No. 4 (third ditto) = 1/4 in.
- Secondary Beam No. 5 (fourth ditto) = 1/8 in.

The reinforced concrete work was carried out on the Kahn system from designs prepared by the Trussed Concrete Steel Co., Ltd., of Caxton House, Westminster, by Messrs. S. and J. Smethurst, of Oldham, under the direct supervision of Mr. T. Banbury Ball, engineer and manager of the Rochdale Corporation Gas Works.



NEWS ITEMS.

New Portland Cement Works.

On the Fonmon Castle estates, Aberthaw, the property of Mr. O. H. Jones, a Portland cement works is about to be established.

Cranmer Memorial at Cambridge.

In the chapel of Jesus College, Cambridge, on Thursday last, the Bishop of Ely unveiled a medallion portrait of Cranmer, framed in alabaster carved in a classical design—the work of Mr. Albert Bruce-Joy.

Change of Telephone Number.

The Coatstone Decoration Company wish us to state that, owing to an alteration in the telephone service, their number from July 1 will be 8,316 City, but they are still at their former address—77, Mortimer Street, Regent Street, W.

Proposed New Town Hall for Newcastle.

The proposal to build a new town hall for Newcastle, at a cost of £100,000, on the site now occupied by the Northumberland Baths, is being hotly contested, the main objection being, apparently, to the inclusion of a large concert-hall to accommodate 3,500 persons, and of a small one for 500. An alternative scheme proposes the reconstruction of the present town hall for purely municipal offices.

New Church at Portobello.

St. James's Established Church, Portobello, which was opened last week, has been built at a cost of £5,000 from the designs of Mr. George Mackie Watson, architect, Edinburgh, in the early decorative style of the fourteenth century. The nave is divided into six bays by massive square pillars and high-pointed arches. There are aisle passages at each side, a south transept, and over the vestibule is a gallery.

The New Indian Capital.

The town-planning experts consulted with regard to the new capital at Delhi have now, it is announced by cable, officially decided against the Durbar site for the permanent capital. They have selected a location in the south-western suburbs of the city, which offers good drainage and a fine prospect. The only objection to it is its distance from the recently selected site of the temporary capital.

A New F.S.A.

At the last meeting of the Society of Antiquaries Mr. Arthur Stratton, A.R.I.B.A., Lecturer at King's College, University of London, was elected a Fellow. Mr. Stratton wrote a life of Sir Christopher Wren some years ago, and revised the last edition of Anderson's "Architecture of the Renaissance in Italy." His chief literary work, however, has been in the completion of the monumental book upon Tudor Domestic Architecture, begun by the late Mr. Thomas Garner, which Mr. Batsford published last year.

Canadian Cement Duty Reduced.

The Canadian Government has reduced by one half the duty of 52 cents per barrel on cement. This is because of a shortage of this article in the West, and the order will hold till October 31st. The reduction equals 26 cents per barrel on importations from the United States, 17 cents on cement from Great Britain, and 23 cents on cement from Belgium. At present the importa-

tion of cement into Canada is merely nominal, but the reduced tariff will doubtless effect a considerable and an immediate increase, which is obviously the object in view. Canadian cement manufacturers have lodged a strong protest against the reduction, but Mr. White, Minister of Finance, is convinced that in the West there is a serious check to building operations owing to the inadequate supply of cement.

The "English Bridge" at Shrewsbury.

At a special meeting of the Shrewsbury Town Council, last week, it was resolved to adopt the recommendations of a special committee with regard to the alteration and widening of the English Bridge. This is described as a "narrow camel-backed structure that spans the Severn, known to all motorists as a dangerous bit, but famous as one of the most artistically beautiful bridges in the country." It is to be altered at a cost of £11,430.

Contract for the New London Dock.

The Port of London Authority decided last week that the work of constructing the new dock to the south of the Royal Albert Dock should be offered to Messrs. S. Pearson and Son, Ltd. The cost of the work, based upon the schedule of prices, will amount to about £1,400,000. The contract will include the construction of an entrance lock 800 ft. by 100 ft. by 45 ft. deep; a main dock 4,500 ft. long, averaging 600 ft. in width and 35 ft. in depth, with a water area of sixty-five acres; a dry dock; a passage connecting with the Royal Albert Dock; railway lines and six sheds, but not the working equipment of the dock. On the south side of the dock vessels will be berthed at jetties to facilitate barge traffic.

Wolverhampton's Old Deanery.

At the monthly meeting of Wolverhampton Town Council, last week, correspondence was read respecting the purchase by the Town Council of the deanery site for the erection of a new technical school. The secretary of the Fraser Geological Trust wrote suggesting that the deanery, as one of the historic landmarks of Wolverhampton, should be preserved as a valuable relic—it might be converted into a public museum. Sir Richard Paget, in the course of a long letter, said that the Church of St. Peter and the old deanery were virtually the only architectural evidence of the history of the town, which dates back nearly a thousand years. The fate of the deanery was not decided at the meeting in question.

Town Planning in Walthamstow.

At Walthamstow Town Hall last week Mr. T. Adams, Local Government Board Inspector, held an inquiry into the application of the Walthamstow Urban District Council for permission to prepare a scheme under the Town Planning Act. Mr. Watson, Clerk to the Council, explained that it was proposed to deal with nearly all the undeveloped land in the district, the greater part of which is in the Northern Ward. No estimate of cost had been made, but the Council would act reasonably and would co-operate with the owners. Mr. Naldrett, who opposed on behalf of some of the property owners, said those he represented were willing to develop their land in a proper manner, but they had no knowledge of what the scheme of the Council was to be, and had no option but to oppose. Evidence was given in support of the scheme, and after a four hours' hearing the inquiry closed.

THE LARGEST REINFORCED-
CONCRETE BRIDGE.

What will be the largest reinforced-concrete bridge in the world is to be built across Tunkhannock Creek, near Nicholson, Pa., by the Delaware, Lackawanna, and Western Railroad. The design is for a double-track structure having ten 180 ft. arches with a 100 ft. arch at each end, and totalling 2,230 ft. in length, with a maximum height above the water of 249 ft. The principal arches are to be reinforced, but they are designed to carry loads independently of the reinforcing. The piers are to be carried down to solid rock, about 95 ft. below the ground surface at the deepest point. The centering to be used in placing the large masses of concrete in position is to consist of hinged trussed arches of steel construction supported by the bridge piers. It was decided to have a ballasted floor construction with a thoroughly waterproof deck, and this would have required a heavy design in steel, which, together with the fact that a material increase in live load would produce a less stress increase in the case of a concrete structure, led to the decision to use this material. It was also felt that the maintenance of a steel structure of such height and length was excessive in view of the liability of the rivets becoming loose and of deterioration being caused by vibration. The cost of renewing such a steel structure, owing to the conditions of height and situation, was estimated to be as great as the first cost.

NEW MUNICIPAL WORKS.

The Local Government Board have decided to hold, or have recently held, as the subjoined dates indicate, inquiries into proposed expenditure by public bodies as follows: Water-supply Works.—Bolton Borough Council, £25,000 (June 19th). Sewerage, Sewage Disposal, Drainage, etc.—Birmingham City Council, £1,127 (June 18th); Luton Borough Council, £1,700 (June 20th); East Grinstead Rural District Council, £4,694 (June 20th); Kirkby-in-Ashfield Urban District Council, £12,000 (June 18th); Balby-with-Hexthorpe Urban District Council, £1,673 (June 19th). Street Improvements, Recreation Grounds, etc.—Ashton-under-Lyne Borough Council, £3,200 (June 19th); Llanelly Urban District Council, £5,100 (June 19th); Penybont Rural District Council, £1,700 (June 18th); Birmingham City Council, £1,270 and £24,972 (June 18th); Hastings Borough Council, £1,770 (June 21st); Llantrisant and Llantwit Fardre Rural District Council, £24,500 (June 19th); Southend-on-Sea Borough Council, £2,244 (June 18th). Various.—Bolton Borough Council, £20,000 for electricity undertaking (June 19th); Rawtenstall Borough Council, £7,500 for ditto and £2,600 for extending and heating Market Hall (June 18th); Aberdare Urban District Council, £5,000 for electricity undertaking and £2,260 for laying out burial ground (June 18th); Winchester City Council, £4,361 for cemetery (June 18th); Slough Urban District Council, £2,500 for furnaces for refuse destruction (June 20th); New Hunstanton Urban District Council, for bandstand and shelters, no amount stated (June 18th); Mynddislwyn Urban District Council, £3,555 (June 20th); Pontefract Borough Council, £21,000 for housing (June 13th); Thetford Borough Council, £7,200 for ditto (June 19th).

THE ARCHITECTS' & BUILDERS' JOURNAL.

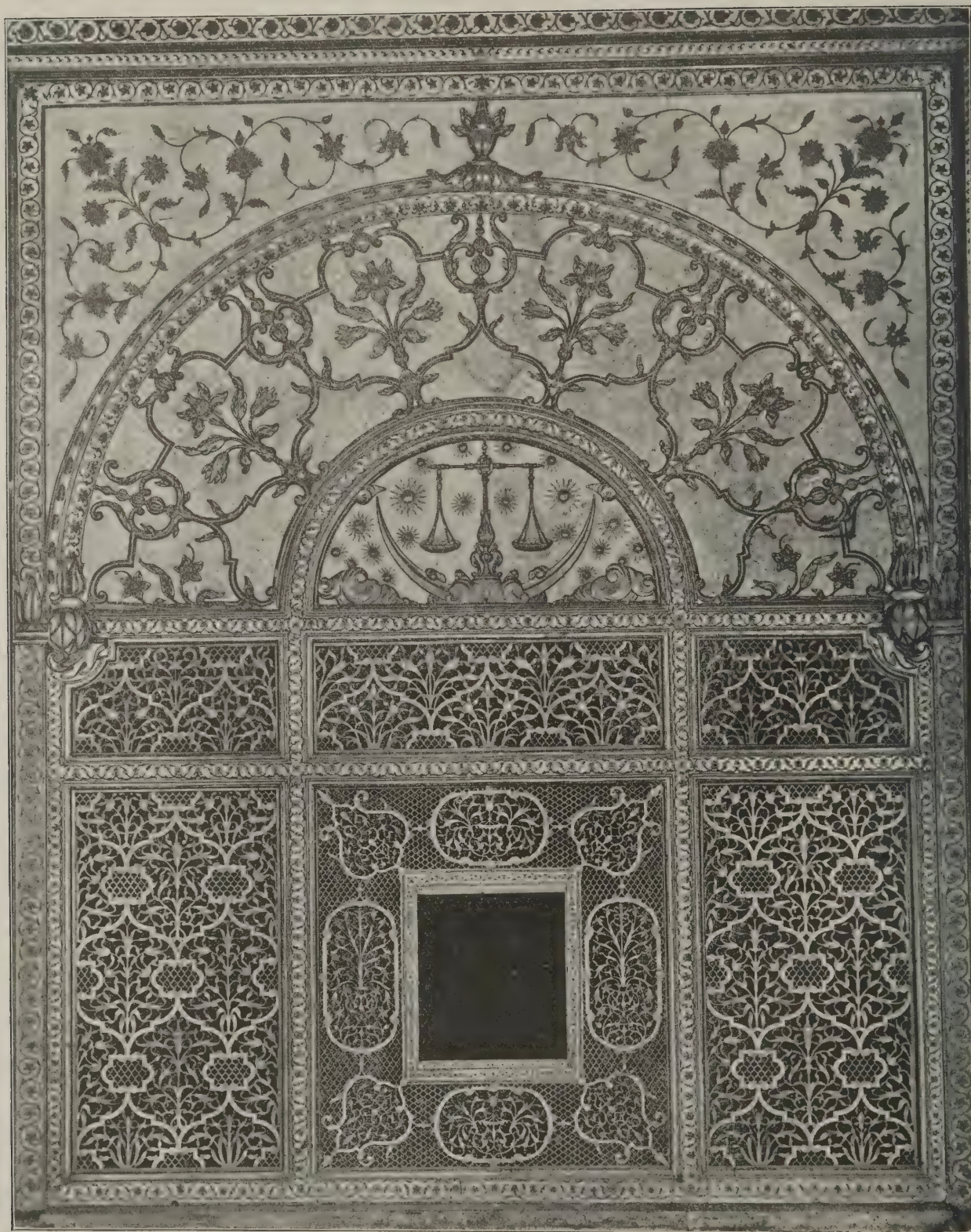
WEDNESDAY,
JUNE 26th, 1912.

Volume XXXV.

No. 910.



DRAWING-ROOM CHIMNEYPiece, "DERRY'S WOOD," WONERSH.
JOHN F. BENTLEY, SON, AND MARSHALL, ARCHITECTS



MOGUL SCREEN FROM DELHI: A WONDERFUL EXAMPLE OF MARBLE CARVING.

The marble, though carved with the intricacy of lacework, is $1\frac{1}{2}$ inches thick. See page 602.

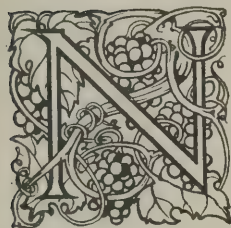
THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 26th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 35. No. 910.

Architects, Clients, and Contractors.



EARLY the whole of the pages of the last issue of the Journal of the Royal Institute of British Architects are occupied with papers and long and elaborate discussions on the position and reciprocal duties and responsibilities of the building-owner, the architect, and the contractor. The discussions represent a perfect maze of differences of opinion, some of which might be put an end to or reconciled by an exercise of common sense and a return to what may be called first principles.

Mr. Saxon Snell, in his very reasonable and moderate paper on "The R.I.B.A. Conditions of Contract," read on April 15th, quotes from a memorandum submitted to the Council by the Practice Committee in 1907. This memorandum refers to the conditions of contract settled in 1879 as having "given considerable power to the architect"; powers, in fact, far too great to please the Institute of Builders, and the present form of contract, drawn up in 1903, was an endeavour to satisfy the builders without injustice to the architect. It was accepted by the Institute of Builders, whether with satisfaction or not we cannot say, but we do know that some of the prominent builders wanted to have every decision of an architect which did not satisfy them subject to outside arbitration there and then, during the progress of the works. This seems almost incredible, but we actually heard this demand made, in conversation, though we should doubt if it was ever formally proposed to the R.I.B.A. The report of the Practice Committee quoted by Mr. Snell went on to say:

"On the settlement in 1903 this [the form of 1879] was altered at the instance of the Institute of Builders. Certain matters dealt with by Clauses 4, 9, 16, 19, and part of 18, were reserved to the architect, but new words were introduced into Clause 30 which had been held to destroy the effect of a certificate given by the architect, and the arbitration clause was also widened so as to lay open to review every certificate whether interim or final, and (subject to certain reservations) every opinion and decision of the architect.

"It has been held by the Court of Appeal in the case of *Robins v. Goddard* (21 Times L.R. 120) that the effect of these alterations is not only to deprive the architect's certificate of all finality as between the building owner and the contractor, but it has also been held by Official Referee Pollock in the case of *Goddard* (building owner) v. *Ferguson* (architect) that an architect who has given a certificate which is successfully challenged by a building owner in an action brought by the builder to recover the amount so certified to be due to him, is liable to repay to his client the building owner the costs incurred in resisting the builder's claim. In giving judgment the learned Official Referee based his decision upon the ground that the architect in his position of agent for the building owner must be held to have contemplated that if he gave a certificate the builder would sue upon it, and that the building owner might resist and incur costs in so doing, and that these costs were within the reasonable contemplation of the architect at the time he undertook to act as such for the building-owner as the reasonable and probable consequences of giving a certificate subsequently held to be inaccurate or excessive.

"The decision appears to carry with it the conclusion that the architect acting under the present authorised Form of Contract is no longer in the position and clothed with the immunities of a

'quasi-arbitrator.' It would also seem to follow that under similar circumstances an architect no longer owes a duty of fair and impartial treatment to the builder."

Mr. Snell characterises the present document as an attempt to revise the previous one "so as to render it more acceptable to our friends the building contractors without giving away the interests of the building-owners. That was a truly conservative policy, and it was no doubt hoped that it would lead to contentment all round. That hope has scarcely been realised, and it would seem that both parties have found, in new and altered provisions, fresh material on which to base quarrels." Mr. Snell thinks that the present Institute form of contract needs very careful revision, and that especially it is too long and complicated—the result of an effort to provide against every possible contingency. It is certainly a lengthy document, but we cannot see that there is any clause in it the purport of which is at all doubtful or difficult to understand. The difficulties, except in one particular, seem rather to arise out of want of attention to them.

Mr. Snell deals with two subjects only among those out of which disputes may arise—the specialist sub-contractor and the arbitration clause. The specialist sub-contractor is an element which has arisen from two causes—the hurry of modern building and the greater complication of things required. It is necessary that some special services—hot-water heating, for instance—should be put into the hands of firms specially concerned with that class of work, and able from their practice and resources to carry it out both well and expeditiously, and in general a firm is selected in which the architect has confidence. Then arises the question, what is to be this firm's relation to the general contractor, and who is to pay him? Clause 28 of the Institute contract gives the option that he may be paid by the general contractor, or directly by the building-owner. We concur with Mr. Snell in thinking the latter alternative undesirable; it complicates matters and leaves the specialist too independent of the general contractor, whose interests he may injure by delay in his work. Mr. Snell's own practice is to nominate the special firms and fix the net amount they are to be paid, but to give them to understand that they look for payment to the general contractor, who is solely liable. On the other hand, he has a provision in the contract that the general contractor must pay to the specialists such payments as the architect shall certify from time to time, and that these amounts are not included in any payment to the general contractor until he produces evidence that they have been paid. This seems a simple and logical method of dealing, and though Mr. Snell says, a few sentences earlier, that it is hardly safe to give the general contractor power to withhold payment in order to speed up a dilatory specialist, this arrangement would practically give him that power. On the other hand, we notice that the chairman for the evening, Professor Blomfield, stated that he always made separate contracts with specialist firms, and dealt with them directly, and thus, as he said, he saved his client the profit which the general contractor charged on the sub-

contract. We should question, however, whether he really effected any saving in that way, and the position seems not quite fair to the general contractor.

But the most serious fault in the present Institute form of contract, in Mr. Snell's opinion, is that the architect is reduced to being a mere agent of the building-owner. In the opening of his paper Mr. Snell advocates the search for a form of contract which shall be based "on the real as opposed to the conventional relations between building-owner, contractor, and architect," and what these "real" relations are or ought to be we presume is indicated in the following paragraph:—

"There used to be a clear distinction, in our relations to the building owner, before and during the carrying out of a contract. In the first place, we were his expert advisers in determining what forms the realisation of his desires should take, and his agents in drafting these forms for the purpose of instructing the building contractor. So soon as a contract was entered into between the parties, to our duties as agent to the building owner in superintending the work was added the honourable one of arbitrator upon points of dispute between him and the building contractor."

Mr. Snell goes on to say that this duality of positions is practically recognised to a great extent, for that many contractors care little about the conditions of contract they sign so long as the architect is one in whom they have confidence, while some of them would accept no form of conditions, however apparently favourable, under an architect in whom they had not confidence, and of course want of confidence may not necessarily arise from a doubt of the architect's probity, but from a doubt of his judgment. We have always been of opinion that the architect was the natural and proper arbitrator between the building-owner and the contractor, but any one who professes that view will very likely hear the remark (as we have heard it) that "the times are past for that now," which means that the builders will not now agree to the architect being general arbitrator—not formally and in documents, at all events, though, as Mr. Snell remarks, many of them act upon it in practice.

The opinion of lawyers seems to be to regard the architect as merely the building-owner's agent; apparently they do not like the idea of an architect acting the part of arbitrator, a function which they regard as especially belonging to the law. On the other hand a legal opinion was more than once quoted in the course of the discussion to the effect that the architect is only an agent until it comes to delivering the final certificate of payment due to the contractor, and that in delivering that he becomes an arbitrator. Surely this is wrong. He is practically an arbitrator every time he delivers a certificate, for in doing so he is exercising his judgment as to the amount of the work done up to that moment, and as to whether it has been properly done or not in accordance with the terms of the contract. If he considered it had not been properly done, he would be justified in withholding the certificate till anything deficient in the work had been made good. And what is that but acting as an arbitrator?

As Mr. Snell says, in the old form of contract the architect's certificate was an "award" from which there was no appeal (except on grounds of fraud or collusion) by either party. Under the present arbitration clause in the Institute form of contract no decision of the architect binds either party, and the architect may be sued for exercising his judgment in a way which may not be endorsed by the arbitrator. The building-owner's case is that he has agreed to pay a certain sum for a building constructed according to definite plans and instructions; that he is entitled to the exact fulfilment of the contract; and he relies on the architect to see that it is so fulfilled, and pays him for so doing. Mr. Snell says that the reply of the architect is that the remuneration received is not sufficient for the close and constant supervision which would alone enable him to say with certainty that every part of the contract had been fulfilled; and that he can only say that "to the best of his knowledge and belief," gained from general inspection, the contract has been properly carried out. Judges in courts of law have often declared that for a professional man to have acted to the best of his knowledge and

ability is all that the law really requires of him. It has been frequently pointed out by judges that the law does not demand of any professional man that he should never be mistaken; it only demands that he should be proved to have done his best and to have acted with *bona fides*. There is that degree of legal protection probably forthcoming for the architect, judging from the analogy of previous utterances from the bench. But in the case of things that are of the first importance in regard to the structure of a building it may be replied that he is bound to know of any important defects. In regard to one case we observe that both a lawyer and an architect, in the course of the discussion, agreed that the deviation from what the architect had (rightly) ordered was so decisive and so important in its deleterious effect on the building that the architect ought to have known of it; that is to say, ought to have assured himself that his orders were being carried out. That was one of Mr. Greenop's cases in which the architect was represented as a victim, a view from which we dissent. We remember a case in which a colonel of a regiment was dismissed from his command in consequence of the existence of serious irregularities among the junior officers of the regiment. The defence was that he knew nothing of these proceedings. The judgment of the court-martial was that that was the essence of his fault; that as commanding officer he ought to have known of them; and the same argument may apply in the case of architects. An architect cannot know every little thing that goes on in a building, except through the medium of a competent and zealous clerk of works; but things that are of great importance he ought to know about. It would be bad for the standing of the profession with the public for an architect to defend himself from responsibility for an important failure in a building by saying he did not know of it. It would lead the public to raise the question—What is the use of architects?

Against the legal dangers to which architects are now subject Mr. Snell thinks there are only two means of immunity. One is to restore the position of the architect as sole arbitrator between the building-owner and the contractor. We quite agree that that is his proper position; that is what he used to be, and ought to be now; but how is the restoration to be effected? It would require, apparently, the agreement of the builders to it; and will they agree? It may perhaps be perceived, on full consideration, that in actual working it would really, in the long run, be better for them; for it must be remembered that a competent and well-judging architect, in the position of arbitrator, is not only concerned to compel the contractor to carry out his work properly, in the owner's interest, but also to protect the contractor against unfair demands on the part of the owner. We are strongly inclined to think that the builders would find it, on the whole, to their interest to again accept the architect as perpetual arbitrator; and it would simplify procedure immensely.

Mr. Snell's other suggestion is that the architect should employ, pay, and be responsible for the clerk of works; though he would have to raise his commission to enable him to do this; and that may not be such an easy matter. The position of the clerk of works is no doubt at present rather an anomalous one. He is chosen, as a rule, by the architect, and is the servant of the architect, but is paid by the building-owner. There have been cases where architects have appointed one of their own staff, generally a pupil nearly at the end of his time, as clerk of works; an excellent thing for the pupil, who no doubt acquires a great deal of practical experience in that way; but whether it is exactly fair to the building-owner is another question. To be a good and reliable clerk of works requires a great deal of practical experience on buildings, and is an occupation in itself, for which special training is needed. But as he is really appointed to give a degree of direct supervision to the building which the architect cannot give, and is really there to carry out the architect's orders, there would seem to be a fitness in his being actually engaged and paid by

the architect, instead of acting under one man and being paid by another. It is at all events a point worth consideration. We should mention that Mr. Snell's proposal for the architect to become responsible for the clerk of works is coupled with the suggestion to insure against the responsibility; which could no doubt be done.

The Architect Poseur.

THE architect poseur—what a type! There are, it is true, not so very many of his kind, because it requires a certain smattering of cleverness to take on a pose. But those who already grace the profession in this manner are all-sufficient. The poseur in architecture is a man who affects one of two things; either he puts himself forward, with no lack of self-confidence, as a tremendously important person, who has an intimate knowledge of things professional and otherwise, or he adopts a languid, expiring attitude towards the art he ostensibly practises. And of the two conditions perhaps the latter is the worse. Can we imagine Sir Christopher Wren surveying his design for St. Paul's with a dreamy air of its too-too-preciousness? or can we imagine some of the leading architects in America to-day dallying with a pencil over a drawing board like some "Grosvenor Gallery, foot-in-the-grave" young men? Of course, the whole affair is ludicrous. Architecture, after all, is a matter-of-fact work of design, and it needs to be regarded as such in a sane, straightforward, vigorous way. Enthusiasm, certainly, and imagination to raise it from the dead level of the commonplace: but let us have done with all pose in regard to it. There is indeed a good deal of cant associated with Art, which is very damaging to artists and their work, and the sooner it is got rid of, the better for all concerned.

The Preservation of Ancient Monuments.

THE evidence given by Mr. Peers, Inspector of Ancient Monuments for the Office of Works, before a joint Committee of the Houses of Parliament last week, brought out forcibly the unsatisfactory state of things existing at present. The Ancient Monuments Consolidation and Amendment Bill only affects monuments that are no longer in use. Buildings used for religious purposes are definitely excluded. Mr. Peers mentioned the case of St. Albans Cathedral, where what was done was in opposition to the whole feeling of the country, yet no one could do anything to stop it. The real fact, however, is that the Chancellor of the Diocese had full power to stop it, but failed to understand the importance of the case. He thought that any man who offered to find the money to restore a cathedral had *ipso facto* a right to restore it himself in any way he pleased. We doubt, however, if this could be done a second time. Public opinion has been more educated on the subject since the days when St. Albans was handed over to the tender mercies of the late Lord Grimthorpe, and a Chancellor who allowed an incompetent person to handle a cathedral as if it were his own property would raise a public clamour which would make things a good deal too hot for him. But in regard to historical monuments not in actual use the case is different. Their value is not so easily understood by the general public as that of a cathedral or other great architectural monument. According to Mr. Peers there is at present nothing to prevent Stonehenge going across the Atlantic, if the owner chose to sell it to an American millionaire. The "preservation order," by which the Commissioners of Works could place a monument under their protection, only applies where there is danger of destruction of a monument by damage from neglect or injudicious treatment. Apparently it does not prevent a sale by the owner to some one outside the country. Mr. Peers suggests that the Advisory Committee should look ahead and make a list of monuments which ought not to be touched under any conditions. It is to be hoped this advice will be acted upon. It is really lamentable to think that monuments which are part of the history of

the country are at present at the mercy of the caprice or cupidity of private owners who may be tempted to part with them for money.

In connection with this matter we may mention the report circulated last week that the magnificent old staircase in Cromwell House, Highgate, was to be sold to an American and taken out of this country. There appears to be some doubt about the authenticity of this report, but, having had the case of Tattershall Castle so recently before our notice, we may well feel some uneasiness when rumours of a similar character are spread in connection with the Cromwell House staircase. The committee of the Hospital for Sick Children in Great Ormond Street are the holders of the lease of the house, which is now used as a convalescent home, and they make the very good suggestion that the building should be acquired for the public, and the adjacent houses cleared away. The staircase and other woodwork within the building are certainly very fine examples of Jacobean work, and an effort should be made to preserve them once and for all.

Fortunes and Misfortunes in the Building Trade.

OF late there have been so many heavy pecuniary failures in the building trade that it is a relief to place on record any incident of opposite character, even though the opportunity to do so is usually marred by a touch of melancholy, since the measure of a man's financial prosperity is not definitely revealed to the public until after his death. With this decent reservation duly observed, there is pleasure in noting that the late Mr. Frederick Ingle, contractor, of Grant-ham, Nottingham, and London, who died on May 30 last, aged seventy-three years, has left estate of the substantial value of £160,149. It is gratifying and reassuring to assume that most of this fairly large fortune was yielded, within a comparatively recent period, by the building industry, which of late has been chiefly distinguished by the extraordinary number of its "failures"—some of them of colossal extent—in comparison with those that occur in other businesses. As to the disproportionate number of bankruptcies, the building trades easily keeping at the head of the list, we have repeatedly indicated some of the principal causes of that bad eminence. We have often suspected that this position would possibly not be so steadily maintained—that the building industry would at least occasionally appear lower down the dismal list—if the order were regulated by the amounts of liability rather than by the numbers of the persons liable, these numbers being greatly inflated by an extraordinary preponderance of "little men," or "men of straw," who take advantage of peculiar facilities for entering the business with very inadequate capital, or possibly no capital at all. An enormous percentage of these adventurers are mostly aspiring journeymen, possessing a little experience but no capital, with a fair sprinkling of rank outsiders, having a little capital but no experience, both conditions trending in a bee-line to the bankruptcy court. Such persons merely "start in business," and the Official Receiver does the rest; and these minor disasters are so numerous as to cast an unfair aspersion on a trade which, to do it justice, needs no exaggeration of its precariousness. The trade has, indeed, its own inherent and inveterate frailties, such as feverish competition and the prevalent neglect of scientifically sound and rigorously pursued book-keeping; the master builder who is able to say at any hour, as he should be, exactly how he stands financially being quite scandalously exceptional. The present moment, however, would be inappropriate for applying the test of relative aggregate liabilities, as recent huge failures of contractors would swell the account abnormally. Some of these colossal crashes have been brought about by mere dilatoriness in settlement by building owners, or by the locking-up of the builders' capital in some other unfortunate way; but this matter has been, at various times, dealt with exhaustively in these pages, with the consequence that builders have bestirred themselves in the direction of a much-needed

reform. Anyhow, it is to be hoped that the happy secret of making a fortune in the building trade did not die with Mr. Ingle. It is delightful to find that this gentleman knew not only how to make money extensively, but how to bequeath it generously, and with grateful recognition of the services of those who helped him, in various capacities, to amass his fortune. Not only has he left £35,000 to be disbursed, at the sole discretion of his executor, among charitable institutions, or for charitable objects, in sums not in any one case exceeding a thousand pounds, but he has directed that various amounts shall be awarded to a large number of his employes—as £1,250 to his London manager, £300 each to three draughtsmen, £250 to his accountant, and the same sum to the widow of his late engineer; £200 to a clerk, £100 to the widow of a foreman, £250 each to two foremen concretors and to a foreman erector; £200 each to a foreman erector, a yard-man, a carman, and an office porter; £500, £300, £200, and £100 to clerks at Nottingham; £300 to a shop-foreman there, and £200 to the saw-mill man, with several minor bequests. Possibly there may be as much wisdom as kindness in distribution of these legacies; but, at any rate, it is reassuring to find that the building trade is still—or was in the immediate past—sufficiently profitable to make them possible.

The Cheapening of Cottages.

THE keen desire of rural councils to build cottages so cheaply that they "can be let at a price within the reach of the farm labourer" grows almost pathetic in its intensity. They yearn to put up cheap dwellings, but are continually baulked by the inelasticity of the by-laws, which insist on the dwellings being decent, and the indigency of the labourers, which is imperative that they shall be cheap. Sometimes they have enough courage to defy the by-laws, but they have never enough to defy the ratepayer, and, in his interests, they are also abjectly in bondage to the inexorable laws of arithmetic, which show that a cottage costing say £150 to build cannot be logically let at as low a rent as one that cost only £120. As the labourer cannot pay the higher rent, it then becomes a question whether his interests or those of the ratepayer are to prevail, and the answer to it usually leaves no doubt as to whether or not this is the age of chivalry. But even a rural district council does not invariably move along the line of least resistance. More often it does not move at all. An exception to both these unheroic policies is worth chronicling, more especially since it includes a sound decision on a question of architects' fees. St. Thomas Rural District Council, at their usual fortnightly meeting, held at Exeter, had under discussion the cost of a few cottages which they propose to build, and the rate of remuneration that the architect is to receive for his share in the work. An architect was appointed, and it was agreed that he should receive the usual fee of 5 per cent. for his services, notwithstanding an offer by another firm of architects "to do the whole thing for 3 per cent., including out-of-pocket expenses." In supporting this offer, a member of the council said it was not the difference between 3 and 5 per cent. (which would not be a great matter on a total outlay of £400) which actuated him so much as the fact that the 3 per cent. firm had had experience of several similar schemes. In one such scheme that the speaker specified the builder's contract was £120 per cottage. This member seems to have been labouring under some slight misapprehension as to the functions of an architect, who, after all, has no very great control over contract prices, which, specify he never so wisely, depend very much more upon local conditions than upon economy of design. In so paltry a scheme, it is not worth while to quibble about the difference between 3 per cent. and 5 per cent., although, as a matter of general principle, we should much prefer to see architects not only claiming the recognised fee, but in other ways discountenancing the cheapening of building. We see no real necessity for ultra-cheap cottages, and have no belief in its actual existence.

PRACTICAL CONDITIONS OF ORNAMENTAL DESIGN.

IT is not quite obvious at first sight why Mr. Woolliscroft Rhead has entitled his book on ornament "Modern Practical Design."* We do not know of any such thing as theoretical design; but a look through the book explains the second adjective, for the object evidently is to consider design for various classes of materials in relation to the practical nature of the material and of its manufacture in each case. But why "modern"? We presume the explanation lies in the position set forth in the first chapter, that "a systematic study of plant form, if it became at all prevalent, would undoubtedly tend to the formation of a new style of ornamental art." This idea, however, is certainly not new. Various artists and writers on art have at different times pointed out the amount of suggestion for ornamental design which may be obtained from a close study and drawing of natural forms—J. K. Colling and Lewis F. Day, for instance; and the first-named artist really extracted some novelty of style in ornament from his studies of natural leafage. Nor do we believe that basing everything in ornament on the study of natural forms would really lead to the foundation of a new school of ornament.

In the first place, it is to be remembered that there are two schools of ornament—that which is founded on a relation to natural forms and that which is entirely abstract and founded on geometry. Some of the best ornament that has been produced has been of the latter class; much of the Byzantine and Saracenic ornament, for instance. And when we come to natural forms, it must be remembered that ornament cannot come too close to nature; it requires to be conventionalised into a systematic form; if it is too close to nature it becomes merely imitation, not design at all. And the process of conventionalising necessarily does away with some of the smaller details which make the differences between natural forms. Nor can we agree with the author that ornament is an all-pervading principle in nature. Nature is beautiful in detail in a thousand ways, but she does not design nor apply ornament on a principle or system.

* "Modern Practical Design." By G. Woolliscroft Rhead, R.E., Hon. A.R.C.A. London: B. T. Batsford; 1912. Price 7s. 6d. net. 8½ in. by 6 in.; 247 pp.



CARTOON FOR STAINED GLASS, "THE SONG OF SONGS,"
BY BURNE-JONES.

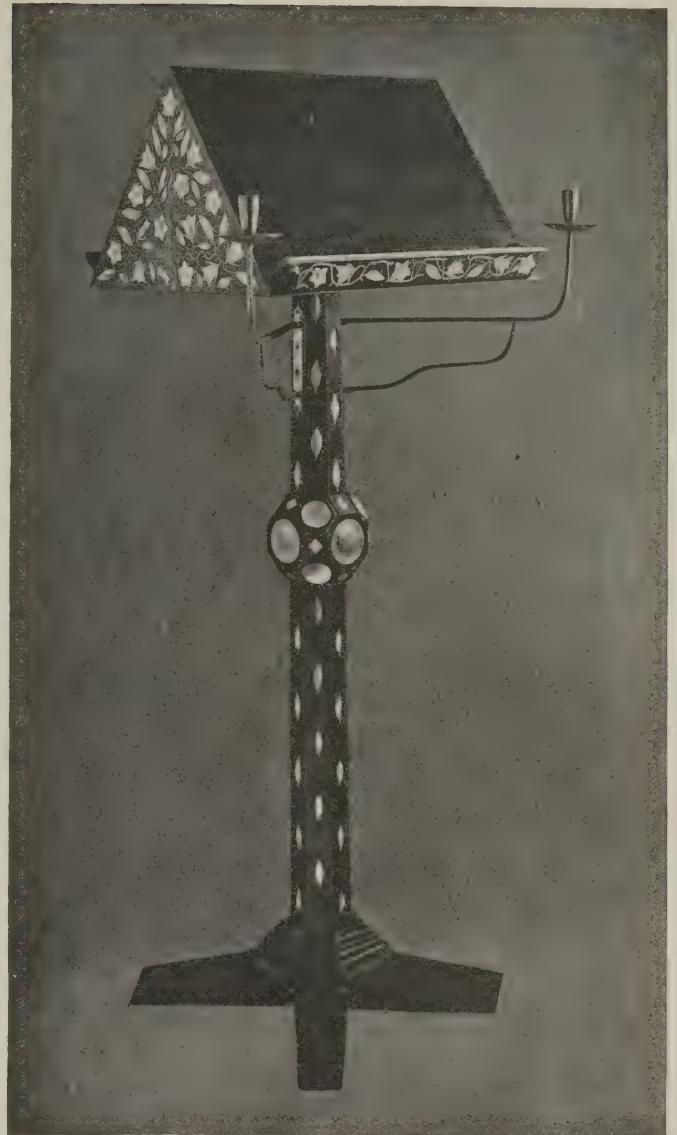
It is Man who designs, not Nature; and the best ornament that has ever been produced has been, on the whole, the furthest from the imitation of Nature.

The author's main position, and his promise of a new school of ornament based on a closer study of natural forms, is therefore an illusion. And there is another general principle, or general statement, which we must dissent from entirely; the insinuation that "pictorial art has arrogated to itself an importance out of all proportion to its real value." We have had this contempt for pictures expressed by various ornamentists, and it is a complete fallacy. A good landscape or figure painting has an intellectual interest beyond what can belong to any form of merely ornamental design, and demands higher powers and training for its production.

But the fact that the author is, as we think, misleading in what may be called the philosophy of his subject, does not detract from the interest and usefulness of his book in a practical sense. To describe and illustrate the type of ornament best suited to a number of different materials, and in each case to give a practical description of the nature and capabilities of the material, and the manner of its manufacture, is a very large programme to carry out within the compass of a comparatively small book; and within these limits it is very well done, and in a manner that argues an extensive technical knowledge on the part of the writer. The chapters on "Plant form as the basis of ornament" only go through what has already been suggested by other writers, and their study will not make an ornamentist; for success in ornament depends on the designer himself much more than on a nature basis. But the chapter on "The ornamental filling of given spaces," one of the most important problems in the disposition of ornament, is a very good one, and the diagrams offer many useful suggestions.

With the chapter on the "all-over patterns" in wall-papers and different classes of textiles we come on some of the matter that makes the real value of the book, the nature and the method of manufacture of each material being considered with reference to the nature of the design best suited to it. In regard to textiles used as hangings, the author rightly says that the foldings should be taken into consideration in making the design; that bold curves and horizontal setting of the design serve to emphasise the foldings, and vertical lines are objectionable. We should go a step further, and lay it down as a rule that no formal geometrical patterns should ever be attempted for hanging textiles, as such designs can never be properly seen in their complete form; they are broken up by the foldings. The design has to be a repeating one, but it should be so far informal in detail that if only a portion of a repeat design is seen in a fold, it should not appear as if incomplete. Carpets, on the other hand, are a kind of mosaic in soft materials, and symmetrical design can be perfectly well used in them, as it will be fully seen and not wasted. In regard to book decoration, while it may be admitted that in the author's diagrams of "page proportioning" the arrangement which he prefers looks very well, yet it is hardly very practical, for it involves the loss of a great deal of space on the page, which may materially increase both the cost and the bulk of the book. After all, a book is primarily something to be read; the decorative appearance of the page is a secondary matter, and should not interfere with the usefulness of the book.

In the chapter on stained glass the technique of the work is very well described in a short space, but something more might have been said about the manner of using the leading. It is possible with white glass only to make very interesting line designs out of the leading only, which is then treated as forming the design in itself. But with a coloured window the leading is only a division between the colours, and should never pretend to form in itself part of the design, otherwise there is a confusion of idea as to the function of the leading. The design by Burne-Jones, given on page 155 of the book,



INLAID LECTERN, BY ERNEST W. GIMSON.

is very faulty in this respect. The framing of the door, and the hinges, are too decidedly defined by the leading, and are shown in perspective; although what seems to be intended for the large mediæval keyhole of the door is not in perspective, but faces one, defined by the leading, which thus seems quite at variance with the rest of the design. The effect is very confusing, and, in spite of the distinguished name of the artist, we cannot call this a good piece of stained-glass design.

"Metal Work and Jewellery" is a good short chapter, and in this class of subject there is much to be said for the hints that actual flowers may give for jewels and enamel. "Dress embroidery" and "Posters" are very fascinating subjects; but hardly within our proper province. The author's design for a fancy dress founded on canary creeper, however, illustrates our position that the imitation of natural forms is not ornamental design; this costume simply consists in copying the forms of the leaf of the flower referred to, placing them on the head of the figure, round the bust and shoulders, and in a much enlarged form round the lower margin of the skirt; these latter are quite out of scale with the rest. That kind of work is hardly ornamental design; it is merely the application of natural leaf-forms to a dress.

The book is of value for the extent of technical information about materials and processes contained in it, all which is useful to a learner in design and justifies the word "practical" on the title-page. As we have given one example of an illustration we do not like, we add other—an inlaid lectern by Mr. Gimson—which we can fully approve.

LEGAL.

Principal Contractors' and Sub-Contractors' Liability for Accident.

In the Court of Appeal on June 21, Lords Justices Fletcher Moulton and Buckley and Mr. Justice Parker heard an application in the case of Padbury v. Holliday and Greenwood, Ltd., and another, in which the defendants, Holliday and Greenwood, Ltd., sought judgment or a new trial in an action tried before Mr. Justice Coleridge and a special jury on February 16.

The action was brought by the plaintiff against Holliday and Greenwood, Ltd., and Wainwright and Waring, Ltd., to recover damages for personal injuries sustained by the plaintiff while passing along the highway through the alleged negligence of the defendants. The defendants, Holliday and Greenwood, Ltd., denied negligence, and in the alternative said that if there was negligence, it was not their negligence, but that of their sub-contractors, Wainwright and Waring, Ltd., in failing to provide a shield or other suitable protection to the public. The latter did not enter an appearance to the writ, but eventually the plaintiff discontinued the action against them; and it appeared that, on January 4, 1911, when the plaintiff, Mr. A. G. Padbury, was passing down Fenchurch Street, a piece of iron fell from the third floor of a building then being erected by the defendants, Holliday and Greenwood, struck the plaintiff's head, and injured him.

On the findings of the jury in the Court of first instance, judgment was given for the plaintiff for £500. The defendants now applied for judgment or a new trial. The Court allowed the appeal, and ordered judgment to be entered for the defendants.

In the course of his judgment, Lord Justice Fletcher Moulton said that in this case building owners employed the defendants, Holliday and Greenwood, the present appellants, to erect certain premises for them, and the contract involved the employment by Holliday and Greenwood of sub-contractors to execute special works. The work of putting metallic casements into the windows was entrusted to Wainwright and Waring. While one of the casements was being put in, an iron tool was placed by a workman in the employment of Wainwright and Waring on the window-sill, and, the casement having apparently been blown to by the wind, the tool fell and struck the plaintiff, who was passing along the street. For the injury so caused to him the plaintiff sought to make Holliday and Greenwood liable. The case thus raised the question of the responsibility of a contractor who employed a sub-contractor for injury done to a stranger through the negligence of a servant of the sub-contractor. Although the view which the law of England took of this question had undergone some transformation, he did not think there was any doubt as to the general principle which now prevailed. After referring to the precedents of *Dalton v. Angus*, and *Quarman v. Burnett*, his Lordship said that, on the authority of Lord Watson's judgment in *Dalton v. Angus*, he was of opinion that before a superior employer could be held liable for the negligent act of a servant of a sub-contractor it must be shown that the work which the sub-contractor was employed to do was work the nature of which, and not merely the performance of which, cast on the superior employer the duty of taking precautions. The injury here was caused by an act of collateral negligence on the

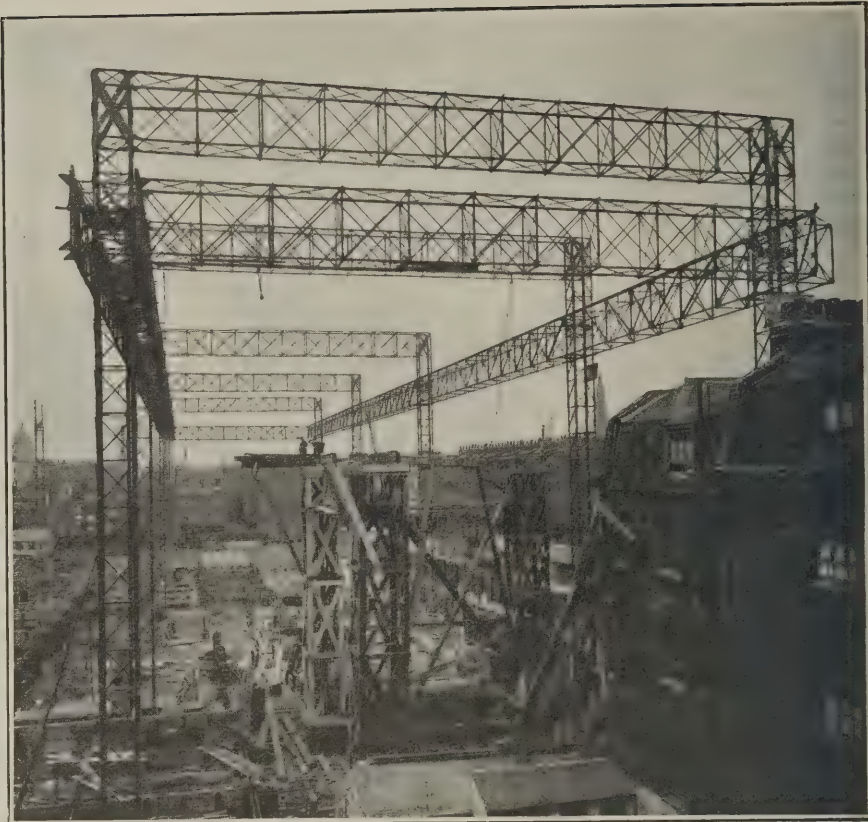


Photo: Record Press.
GANTRY FOR NEW BUILDING OF H.M. STATIONERY OFFICE, STAMFORD STREET, LONDON, S.E.

part of a workman who was a servant of Wainwright and Waring and not a servant of Holliday and Greenwood, and Holliday and Greenwood were not liable for the consequences of that negligence. He therefore thought that the appeal should be allowed, and entered judgment for the defendants.

Lord Justice Buckley and Mr. Justice Parker delivered judgment to the same effect.

A NOVELTY IN BUILDING
CONSTRUCTION PLANT.

On a site in Stamford Street, London, S.E., there is now in course of erection a new building for H.M. Stationery Office. The area has been cleared, the foundations have been built, and a start has been made with the superstructure, which is to be of reinforced concrete. In connection with the work a decided novelty has been introduced in the form of a gantry covering the whole site. We publish a photograph of it on this page. So far as we are aware, such a gantry has never before been employed for the erection of a building, though it is usual to find similar structures in shipbuilding yards. We hope later to publish detailed particulars of the work and to give some definite information as to the idea of those who have introduced it: but, meanwhile, we may assume that the object of the gantry is to save time and money, and it will be interesting to know whether in the end this result has been achieved. The gantry consists of nineteen lattice steel stanchions nearly 90 ft. in height, supporting girders at the sides and ends, and will eventually be fitted with travelling cranes for handling the material. It has cost some thousands of pounds to erect. Messrs. Drew-Bear, Perks, and Co., Ltd., are responsible for the steel work, the general contractors for the building being Messrs. Perry and Co. (Bow), Ltd.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

Cross-Lighting and Ventilation.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to the interesting review of Mr. Robson's book in your last issue, there are one or two points in which I would like to join issue with your reviewer.

After several years of cross-lighting, I am still of opinion that the advantages to be gained far outweigh the disadvantages. Moreover, it is difficult to understand how one can get efficient cross-ventilation unless one has windows on opposite sides brought down to the same level near the floor.

To obtain efficient ventilation it is, of course, understood that every room must have two external and opposite walls which can take the wind-pressure. With reference to Fig. 3 on page 624 of your last issue, assuming that the bottom of the plan is the south, and assuming also that the wind blows from the south, what wind-pressure would be felt on the windows between the hall and the classroom? Practically none. In a school on the open-air principle, the south wall of the classroom would receive the full pressure of the wind, and the change would therefore be rapid. With a plan of the type shown in Fig. 3, I am prepared to admit that natural ventilation would not supply the requisite amount of air under all conditions.

With reference to the "Plenum" system of ventilation, I quite agree with Mr. Robson in his remarks. Given the "Plenum" system, every door and window has to be kept shut, otherwise the system does not act, or does not act properly.

Your reviewer states that without mechanical ventilation, it is impossible to obtain the requisite amount of air for schools. With this I cannot agree. I am often carrying out experiments, and as recently as June 18 I carried out some further experiments before a deputation from an important northern county, and completely proved that sufficient air was brought into the schools. This was obtained by means of hoppers only. The wind outside was blowing at a rate of just over four miles per hour, but sufficient air was coming through the hoppers only to change the air in the room ten times per hour, and that without any draught being felt. This rate of change was sufficient to supply a room containing sixty children with 1,500 cubic feet of air per hour per child. Subsequently the room was filled with smoke, and then all the windows were opened. In three minutes the air inside the room was as clear as the air outside.

If your reviewer is in Derbyshire at any time, I shall be very happy to go round with him, and I hope prove that natural ventilation is not only as good as, but far better than artificial.

GEORGE H. WIDDOWS, A.R.I.B.A.,
Architect to the Derbyshire Education
Committee.

June 21, 1912.

[We considered mechanical ventilation necessary, or, at all events, the most efficient, for large and crowded schools, as for all large and crowded buildings; small schools may do very well without it. A complete test of purification of air can only be made by microscopic examination of the air, as was done in the case of the Scotch school to which we referred. The mere appearance of a clear atmosphere is not conclusive; the most serious impurities may be those which cannot be detected by ordinary vision. The question is open to differences of opinion, but those who recommend mechanical ventilation are not to be called "faddists"; they are people who are relying on scientific demonstration.—ED. A. AND B. J.]

SOCIETIES AND INSTITUTIONS.

Institution of Gas Engineers.

The annual meeting of the Institution of Gas Engineers was held recently, under the presidency of Mr. R. G. Shadbolt, of Grantham. Mr. Corbet Woodall was elected president for the ensuing year.

In the course of his address the President referred to manufacturing processes, and said that whereas not many years ago invention in carbonising methods was almost at a standstill, now the ordinary managing engineer who was on the point of extending his plant had a selection almost bewildering in its variety of method and rivalry of claim. The advent of the vertical retort in its various practical forms had quickened insight into carbonising methods generally, and the reflex action upon older systems had been most beneficial.

There was also an unmistakable movement in the condensing, washing, scrubbing, and purifying processes. Agreement in the main functions of condensation, its limitations and effect upon subsequent treatment of the gas, was much more general than formerly, with the result that there was greater control of condensing appliances—as in the growing use of the water-cooled types, and the separate treatment of gas for the removal of tar and tar vapours which mere reduction of temperature failed to effect. In washing and

scrubbing methods signs were not wanting in some quarters of a return to favour of the tower-scrubber. The application of centrifugal treatment to the washing, scrubbing, or purifying agent was also making advances; and, in common with carbonising methods, all purifying processes, from the hydraulic main to the station-meter, were showing unmistakable signs of development in numerous directions.

The question of long-distance supplies had assumed a new importance under high-pressure conditions. Many of the objects and purposes to which gas supply was applied were fully realised, and served under comparatively low-pressure systems, but low pressures in the general supply did not provide sufficient range of action, and whereas it was but a matter of mechanical adjustment to reduce from a higher to a lower potential, the conditions surrounding the contrary process were often prohibitive. Once the initial pressure of gas delivery was placed constantly above that required for all working purposes, the first step towards an infinitely wider field of application would be taken. From this point forward the requirements changed with bewildering variety, and the altered requirements were evolving a distinct class of gas engineer, who had certainly not the least interesting or important sphere of operations. Primarily a purveyor of potential heat energy in one of its cleanest and most concentrated forms, he had the important function of applying it to all kinds of purposes, domestic and public, industrial and commercial.

THE STREET NAME-PLATE PROBLEM.

The article on the street name-plate problem in the JOURNAL of June 12th has been widely quoted and commented upon, and among the communications that it has evoked is one from Messrs. Doulton and Co., Ltd., of the Royal Doulton Pottery, Lambeth, S.E., who send illustrations (one of which we reproduce) of their stoneware lettered tiles, as supplied to the London County Council, and to various borough and district councils. For use as street name-plates, or for the designation of houses, these tiles can be assembled to form any required name, each tile carrying a separate letter. The lettering, as will be seen from the sample given, has the supreme merit of legibility, as well as considerable elegance in the design; while the form of the letter has been so well considered as to render the spacing quite satisfactory in every combination. The street-name tiles are $5\frac{1}{8}$ in. high and $3\frac{1}{4}$ in. thick, and have a key back for fixing, as have also the house-labels, which are $3\frac{3}{4}$ in. high. The tiles can be used with or without frame-moulding; and a great advantage of the system is the permanence of the colouring, which can be kept bright by simple cleansing. The firm supply other forms of ceramic letter tablets and signs, as well as stoneware panels of large dimensions and special design. Many such special designs, we understand, have been supplied to large and important buildings, such as town-halls, banking premises, hospitals, etc.

OUR SOUTH AFRICAN EXPORT SUPPLEMENT.

With the present issue is included, without extra charge, a 28-page SOUTH AFRICAN EXPORT SUPPLEMENT, in which will be found an authoritative account of the present position of architecture and the building trade in the Union of South Africa, as well as a brief survey of the architectural history of that rapidly expanding country. It is believed that, from a business point of view also, this Supplement will be highly appreciated both at home and abroad as a valuable means of bringing the respective countries into closer commercial relationship.

PROPOSED NEW MUNICIPAL WORKS.

The Local Government Board have decided to hold, or have recently held, as the subjoined dates indicate, inquiries into proposed expenditure by public bodies as follows: Water-supply Works.—Chelmsford Rural District Council, £6,350, for Broomfield (June 26); Fylde Water Board, £120,000 (June 27); Penzance Borough Council, £2,350 (June 28). Sewers, Sewage Disposal, Drainage.—Sheffield City Council, £13,622 (June 25); Chorley Borough Council, no amount stated (further inquiry, June 26); Yeovil Rural District Council, £3,540, for Stoke-under-Hamdon (June 28); Manchester Corporation, £4,310 for filtering and aerating plant (June 27); Crediton Urban District Council, £16,300 (June 27); Carlisle Rural District Council, £1,250, for Kingmoor and Stanwix (June 28). Street Improvements.—New Roads, Recreation Grounds, etc.—Sheffield City Council, £15,268 (June 25); Chelmsford Borough Council, £4,760 (June 25); Widnes Borough Council, £1,900, £2,600, and £12,780 (June 28); Manchester Corporation, £4,725 (June 27). Various.—Sunderland Borough Council, £37,207 for electricity undertaking (June 26); Leyton Urban District Council, £1,300 for ditto (June 24); Abersychan Urban District Council, £26,000 for housing (June 25); Newbury Borough Council, £2,020 for ditto (June 27); Radcliffe Urban District Council, £13,000 and £13,610 for ditto (June 27); Radstock Urban District Council, £6,600 for ditto (June 26); Featherstone Burial Board, £1,100 for burial ground (June 26); Kingston-upon-Hull City Council, £2,585 for stables, etc., and £1,350 for refuse crushing plant (June 25); South Shields Borough Council, £8,850 (June 25).

The Building Trade Unions.

A private conference of trade unions representing men employed in the building trade was held in London last week to consider the proposed amalgamation of the unions under the title of the Amalgamated Building Workers' Union, with a view to maintaining "a fighting organisation working to improve the conditions of the workers." At the end of the meeting Mr. Bowerman, M.P., stated that the Conference, which represented thirteen unions, had approved the scheme. A ballot of the members concerned will be taken not later than September 30.



STONEWARE NAME-PLATE, BY DOULTON AND CO., LTD.

DETAILS OLD AND NEW.—XLV.

Bay Window, West Mills, Newbury.

Dr. Syntax was not more persistent in the pursuit of the picturesque than many architects are to-day. With what assiduity do they torture brick and mortar, timber and tiles, to the simulation of the merely ancient—the *moderno antico* of Walpole! With what disregard of the vital necessities of life do they proceed! Without headway, ventilation, or light, houses are foisted upon an unsuspecting public. A house or cottage, the original of which was built to harbour labouring men, becomes the home of a stockbroker who finds himself under the painful necessity of adopting the patriarchal life—of, in short, doing something stupid or affected, or living an anachronism in his own house.

The true picturesque cannot be made by the deliberate hand of art. Time alone can do it.

The gable from the West Mills, Newbury, seems to us to be picturesque. Just consider how the tile-hanging is done. One would not recommend anyone to copy it. But the idea of the bay is so delightful; it is such a useful feature, that it would be a pity not to be able to reproduce some of its charm. And certainly it it be accepted for what it is—purely a utilitarian affair—and treated simply, not all the beauty will escape, and, perchance, a new charm may creep in. The relation of this little bay to the gable in which it is set and the contradiction of the lines of

the two gables are pleasant to notice. At the base of the gable can be seen the half-timber construction which probably stood intact for a century or so, until the weather got through its joints and a new builder covered it with tiles and knocked out the bay window from which to catch a glimpse of the Kennet. Like all old tile roofs—older, that is, than the eighteenth century—this one is pitched with an apex at a sharper angle than 90 deg. The verge-board is moulded and projects slightly beyond the face of the tiles. Purlins, which support them, can be seen in the photograph view. As a whole, the gable is a pleasing and uncommon arrangement, and can be easily adapted.

J. M. W. H.

COMPETITIONS.

Sunk Bandstand, Hastings.

Twenty-three designs for the proposed sunk bandstand and colonnade at Warrior Square, Hastings, were submitted. Mr. Philip Tree, of St. Leonards, was awarded the first premium; Mr. Boutcher, of London, the second.

New Building for the Port of London Authority.

The six selected competitors in the final competition for this building, to be erected on the area comprised within Seething Lane, Crutched Friars, and Trinity Square, E.C., will send in their designs on Monday next, July 1st. The names are:

Mr. Robert Atkinson, Mr. Edwin T. Cooper, Messrs. Lanchester and Rickards, Mr. Reginald Truelove, Messrs. Wallis and Bowden, and Mr. Ernest W. Wray.

THE PROJECTED AUSTRALIAN
CAPITAL CITY.

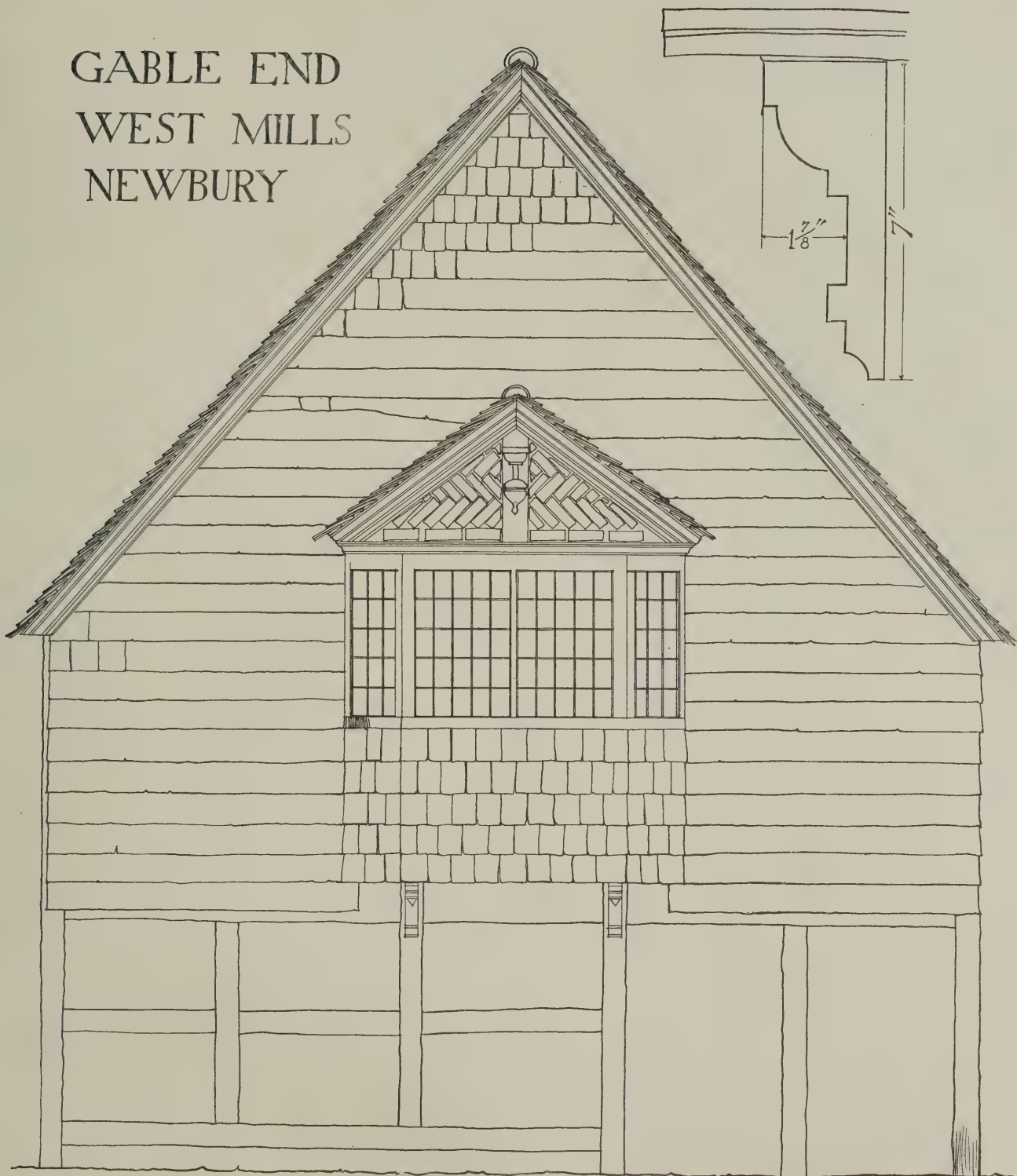
It has been already announced that the first premium for the scheme for the projected Australian capital city at Canberra has been awarded to Mr. W. B. Griffin, of Chicago. *Apropos* of this decision, an Australian correspondent of the "Times" contributes an interesting article on the subject. The site, he says, is a splendid plateau about 2,000 ft. above sea level, situated a little to the north of the highest peaks of the Australian Alps. The northern part, consisting of the plateau on which the city will rise, is to-day spacious and pleasing meadow land, generally undulating. The country is sparsely inhabited, and, as the spectator views it from some convenient vantage point (looking towards the north, for instance, from Mount Stromlo, where the Observatory is to be erected), he sees few signs of what habitation there is. To the right lie the buildings of the Military College at Duntroon, centred round an old farm homestead and already making quite a hamlet of its own. Near by are the knobs called Mounts Ainslie and Majura. From them fields fill up the broad valley that stretches over to Black Mountain, another knob on the left, which rises steeply from the plain and stands out in sharp contrast to other features of the northern aspect. The Molonglo River, a placid willow-lined brook, which flows right through the chosen site, disappears from view at the foot of Black Mountain, and further over to the left, where the larger bulk of Mount Coree fills in the horizon, it slides into the stream of the Murrumbidgee. In the middle of the view from Mount Stromlo the spectator can distinguish the little Canberra church and parsonage, and more to the left the Acton homestead and a few other scattered houses. The waterworks from the Cotter will be on the extreme left hand; the railway to Jervis Bay (seaport and site of the Naval College) and the outer world will run out into the extreme right.

In the winning American plan the Molonglo River is boldly treated, and the city is divided by three large sheets of water, with parks and boulevards. Immediately facing the central lake, on the southern shore, is the official quarter—Parliament Houses and Government Buildings, extending down to the lake front, with streets laid out in octagonal form around them. A fan-shaped residential quarter lies on one side, and on the other are spread in lines following the natural contour the municipal centre, the University, and the industrial centre. The general plan is for radiating streets with connecting crossways. The railway is brought at the back through the industrial, business, and market quarters to a convenient central point. From the Parliament buildings as a centre radiate the main thoroughfares, the direct arteries of communication between the outlying parts of the city. Most of the plans from which the final selection was made followed the radial form. The German idea was for what is described as "a classically built city," with streets in sweeping curves and leaving the Molonglo waters almost undeveloped as compared with the American scheme. The French plan was for a fan-shaped town, rich with elaborate parks and boulevards.



GABLE END, WEST MILLS, NEWBURY.

GABLE END
WEST MILLS
NEWBURY



SCALE OF FEET 0 1 2 3 4 5 6 7 8 9 10 11 12 13

NEWS ITEMS.

New Art Gallery at the Guildhall.

It is stated that a scheme for the erection of a new art gallery at the Guildhall, in the City of London, at a cost of £50,000, is under consideration.

Cannon Street Subway.

The City Corporation are about to proceed with the new subway underneath Cannon Street, opposite the Mansion House Station, for which Parliamentary powers were recently obtained. The work will cost £16,000.

Restoration of Chepstow Church.

The fine parish church of Chepstow, which is of Norman date, is to be further restored. It is proposed to take down an unsightly gallery, to rebuild the north transept to correspond to the south one, and to rebuild the aisles. The scheme is estimated to cost £5,000.

Scaffold Accident.

A master-builder named Green, of the firm of Messrs. Berrill and Green, contractors, of Wellingborough, was fatally injured last week through the collapse of a scaffold at Wollaston Waterworks, he and others being hurled a distance of 50 ft. His partner saved himself by clinging to a pole. Two other men were badly injured.

Removal of a London Statue.

The eighteenth-century statue of the founder, Sir Robert Geoffrey, of the almshouses of the Ironmongers' Company in Kingsland Road, now acquired by the London County Council as an open space, has been removed from its original position, and will be re-erected at the new almshouses to be built by the Guild at Eltham. A replica will be presented to the Council for erection in the garden.

Two Heating Contracts.

The Acme Ventilating and Heating Co., of Liverpool, have been entrusted with the heating contracts for the Council schools in Junction Road, Burgess Hill, Sussex, under the instructions of Mr. F. Wood, A.M.Inst.C.E., county architect, Lewes; they have also secured the heating contract for the new Washbrook Chapel, Hollingwood, Oldham, the architect of which is Mr. H. Kelsall Armitage, Liverpool.

The Old Reindeer Inn, Banbury.

The ceiling and panelling of the Old Globe Room of the Reindeer Inn, Banbury, are in course of removal to London, where they will be re-erected at the premises of Messrs. Lenygon and Co., in Old Burlington Street. The ceiling and panelling have been purchased by a well-known American. It has been represented to him that they ought not to leave this country, and he is quite willing to part with them on that understanding. Up to the present time it has not been decided to remove the windows and gables of the room, because the people of Banbury have expressed a wish that they should remain.

Another Big London Hotel.

Rumours of the building of a large hotel in Piccadilly on a site facing the Green Park have been circulated for some time past. The "Standard" now states definitely that such a building is to be erected by Mr. Frederick Sterrey, the chief hotel proprietor in New York. The work of clearing the site, which is at the bottom of the dip, and now occupied by six large houses and shops, will be commenced next month. It is stated that

the site will cost £1,000,000, and the building itself, which is to be of eight storeys and to contain nearly a thousand rooms, £600,000. Drawings will be submitted to the London County Council shortly.

Rembrandt and Meryon Etchings.

On Wednesday last, at Messrs. Sotheby's, some fine etchings from the collection of Sir Frederick Wedmore realised a total of £3,011. They included works by Rembrandt, Méryon, D. Y. Cameron, Muirhead Bone, and Whistler. "L'Abside de Notre Dame de Paris," by Méryon, second state, on thin ivory-white paper, was sold for £330, and "St. Etienne du Mont," first state, on green paper, £70.

The London Society.

A meeting of this society will be held tomorrow, Thursday, at the Royal Society of Arts, John Street, Adelphi, at 8.30 p.m., when there will be a debate on Mr. Raffles Davison's paper, "London as it is and as it might be." Colonel R. C. Hellard, C.B., will open the discussion by explaining the principles on which the recommendations as to the proposed new roads in the report of the Traffic Commission have been made.

Resignation of Sir Maurice Fitzmaurice.

At last week's meeting of the London County Council the resignation of Sir Maurice Fitzmaurice, chief engineer of the Council and county surveyor for the City of London, was accepted as from the end of the present year. It was reported that the resignation was proffered in order that Sir Maurice might commence private practice. He has held the position of chief engineer since January 1st, 1902, and has been responsible for, among other work, the construction of the Rotherhithe and Greenwich tunnels and the embankment of the new County Hall.

The Future of English Wall-Painting.

At a meeting held last week at Crosby Hall, under the auspices of the Society of Mural Decorators and of Painters in Tempera (Sir Charles Holroyd presiding), Professor Selwyn Image, speaking on the future of mural painting, said it would be difficult to imagine anything more likely to arouse the enthusiasm of art lovers than the movement connected with the exhibition of designs for mural painting now open at Crosby Hall. The social idea of art, he said, was spreading among us—that is, the idea that art is not a thing for the fortunate few, but for the whole community, through the decoration of our public buildings. So he would say to the critics, be generous to this movement; and to the students, be tremendously serious: do not treat wall-painting as a sort of bank-holiday lark. And as they are serious, so must they be simple in their methods. He would draw their attention to the astonishing simplicity of the beautiful old English wall-paintings, of which several copies are being shown in the exhibition (which closes on Saturday next).

OBITUARY.

Mr. J. Wright Clarke.

We regret to announce the death of Mr. J. Wright Clarke, of New Wandsworth. As instructor in plumbing at the Regent Street Polytechnic for a period of twenty-eight years, he was well known. He was also the author of numerous technical books, including several on plumbing and sanitary science, which are highly esteemed.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Piccadilly and Regent Street Buildings.

In the House of Commons, Mr. Soames asked the Secretary to the Treasury whether the building adjoining the Piccadilly Hotel on the east side, which had been set back, was on Crown land; and, if so, whether he was aware that a front was now being erected which, instead of completing the design of an eminent architect for the elevation to Piccadilly, was of a totally different character, completely discordant with the remainder of the block; whether drawings of this front were submitted to any Government department and approved by them; whether it was the original intention of the Government that, in the rebuilding of Regent Street Quadrant and the block of Piccadilly east of the hotel, there should be a similarity of treatment of the whole façade; and, if so, why that intention has been abandoned; and whether the Government in future will exercise sufficient control over the buildings erected on Crown land to prevent the recurrence of such an unhappy result.

Mr. Masterman said the building referred to stood on Crown land held under a lease granted before the hotel was commenced. The Commissioners of Woods had had prolonged negotiations with the various parties concerned, but they were advised that they had no power to prevent the re-erection of the old front. It was the intention that, in rebuilding the Quadrant, there should be similarity of treatment throughout, but objections had been raised to the original design by contending interests, and the question was now under consideration. No definite design was even settled for the buildings in Piccadilly east of Nos. 19 and 20. In normal cases the Commissioners had full power to control buildings erected on Crown lands. In this instance there was no new building, but only the re-erection of an old façade removed when part of the former premises were thrown into the street.

Mr. King asked if he was to conclude that the beautiful design was not to be carried through.

Mr. Masterman said he did not think that was to be concluded from his reply.

India's New Capital.

Mr. Montagu, the Under-Secretary for India, informed Mr. Wedgwood that the area now being considered for the purpose of the site of the new capital at Delhi formed part of the lands which were notified immediately after the announcement at the Coronation Durbar for acquisition under the Land Acquisition Act. In his Budget speech on March 25th, the Viceroy said that the cost of acquiring a space of thirty square miles embracing this site would not be more than £200,000 or £233,000.

New Building in Lincoln's Inn Fields.

Mr. Remnant asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, if he could state whether the building now in course of erection adjoining the Land Registry in Lincoln's Inn Fields was being built for the Government; and, if so, under what Act and for what purpose was it intended.

Mr. Wedgwood Benn, in a printed reply, stated:—The answer to the first question is in the affirmative. The Act is 63 and 64 Vic., c. 19. Until the accommodation is required by the Land Registry, the greater part of the building will be occupied by the Land Valuation Department.

BELGIAN SCAFFOLDING PRACTICE.

BY A. G. H. THATCHER.

In building practice, there are doubtless many matters on which international interchange of ideas would be beneficial. Mr. Thatcher, who has rendered excellent service as a Government expert on scaffolding, shows in this account of Belgian scaffolding practice how largely Belgium has profited by the example of adjacent countries, and, inferentially, what we may miss by our insularity.

MOST countries in Western Europe are now to an extent cosmopolitan. Habits and conditions tend to uniformity, and methods likewise tend towards regularity. The geographical position of Belgium, surrounded as the country is by the more progressive nations, allows to a considerable extent the performances of the neighbouring nationalities to be reflected within its boundaries. It is therefore by no means strange that, as a rule, Belgian scaffolding has no particular characteristic of its own, but follows the methods usually adopted and seen in England, France, and Germany. Each of these national types is at times to be seen in Belgium, with such slight variations as local necessities demand, or local proclivities dictate.

In one particular, however, the Belgian builder adopts a distinctive line of his own, and this, curiously enough, is in the habit of foresight.

The Belgian builder seems to be the only representative of his class to realise and make provision for the certainty that a building will from time to time require to be repaired, and that repairs of any extent, even if it be only exterior painting, require scaffolding of some kind. This contingency our Belgian confrère anticipates by arranging, along the ex-

terior walls of the building, immediately under the cornice or eaves level, a series of openings in the brickwork. These are left as the erection of the building proceeds, and on completion they are covered with iron plates, sometimes quite plain but usually showing some slight attempt at ornamentation (see Fig. 1).

When repairs are required, it is quite a simple matter to remove these plates, insert needles, and suspend the scaffolding on them. Fig. 2—a sketch taken in Brussels—is a general illustration of the method. Fig. 3 is a section showing the framework in detail. No bracing is required, and the scaffolding is not supported from below, the mere force of gravity helping to keep it steady. The connections to the needles are made in two ways. The connection nearer the building is of cordage. This is done in order to prevent, by reason of the friction set up, any tendency on the part of the scaffolding to move from or towards the building in case the needle happens to be not quite level. The outer connection is simply an S-hook of iron (Fig. 4). The scantling used is of the slightest. At times light poles are split and fitted like ladder sides. The needles average 6 ft. to 8 ft. apart. To prevent the structures swinging outwards when the men are at work

on the lower stages, a spike is driven into the wall and a connection made to it. The workmen do not use ladders in order to get about. The platform is of one board only, and this enables the mechanics readily to use the footholds and climb from platform to platform.

Guard rails are regularly provided on

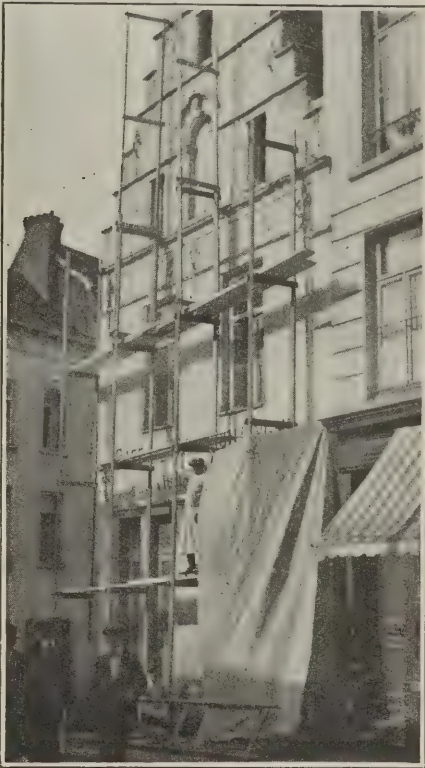


FIG. 5.

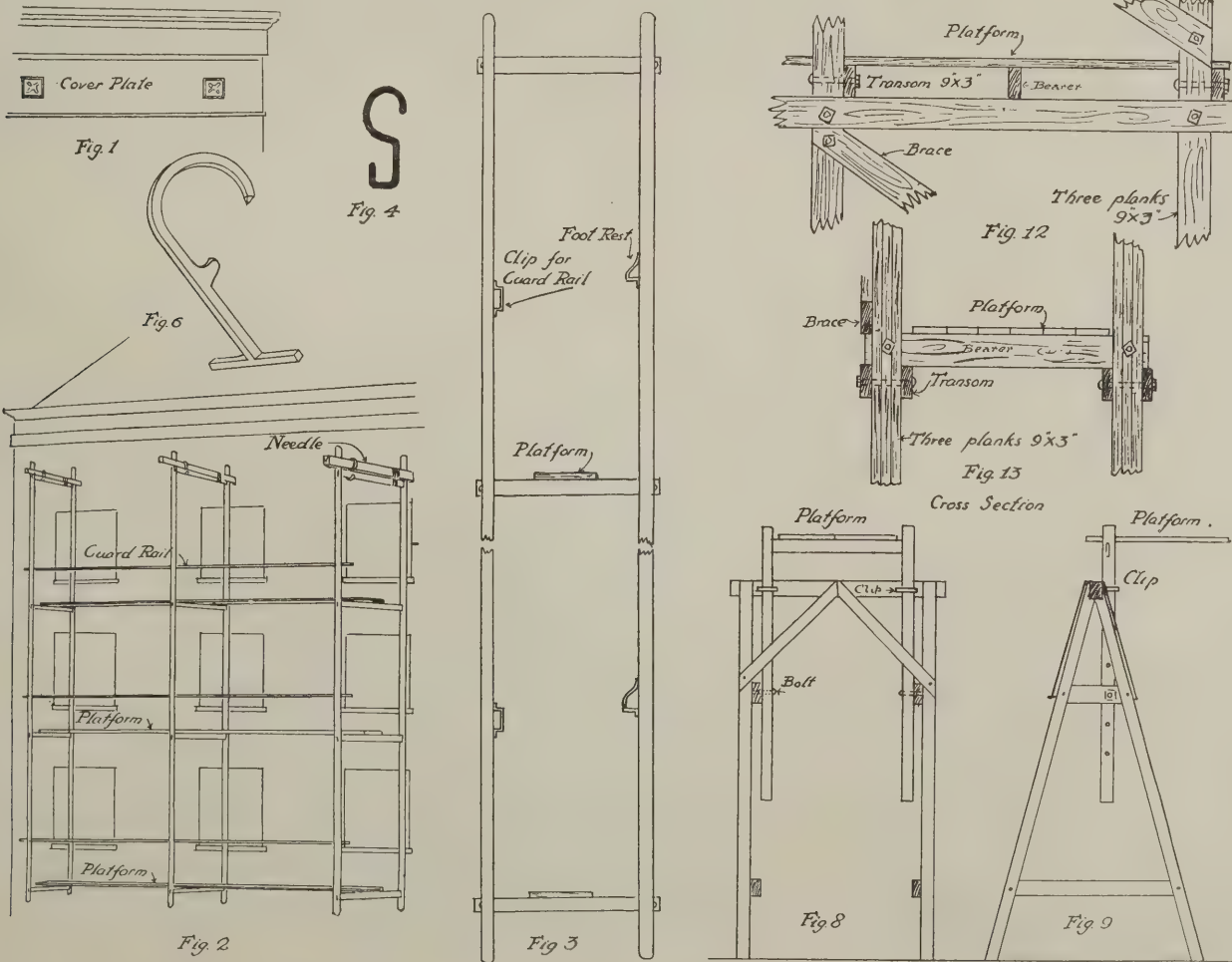




FIG. 11.

the outside; and, generally speaking, the whole arrangement answers its purpose well.

At times the design of the building prevents the use of needles. The same material for scaffolding can be adapted for erection on the ground, and serves usefully where the work to be performed does not necessitate the use of heavy materials (see Fig. 5).

The advantages of the system just described, as compared with the use of boats or cradles, are that there is less swaying in a wind, that the whole front of a building can be worked over at once, and that materials of an awkward nature to handle and fix, such as rainwater piping, can be successfully dealt with.

The system of suspending scaffolds is common in Italy; in fact, it is apparently a very old method, and one that was generally used in building the mediæval cathedrals.

Although the scaffolding just described is that which is most commonly employed in Belgium for effecting repairs, the cradle is also to be seen, although not to the same extent as in England, where the cradle scaffold has perhaps reached the greatest development yet attained, the methods arranged for its suspension being at times most ingenious. In Antwerp, however, an appliance for this purpose is in use which is particularly suitable for the work. Fig. 6 shows the appliance. A slate can be taken from the roof, and the quadrant pitched into the wall plate. Any turning movement is prevented by the T-piece which fits against the wall. The cradles are practically the same as the English, and are raised and lowered by blocks in the usual way.

Fig. 7 is a photograph from Antwerp showing an arrangement of trestle scaffolding. It is a good example of how not to do it although to some extent it follows the Scottish system. It is both blocked up and carries another trestle—two forbidden practices. The arrangement shown by Figs. 8-9 seems to be a good one, as reference to the drawings (p. 659) will show. The base is higher than is customary in

France, but the principle is the same. The members are firmly bolted together, and the rising standards are also bolted where shown to the required height.

Pole scaffolding is not a strong point with the Belgian builder. The general arrangement is after the English methods, but to our eyes very defective. Fig. 10 shows a pole scaffolding erected in Brussels. The poles are not always of the spruce species, but are of a growth having many more branches which in many instances are not lopped off closely, which may be an advantage in preventing cordage slipping. Putlogs are usually of short poles, and, to facilitate tying-in, are carried within the building wherever

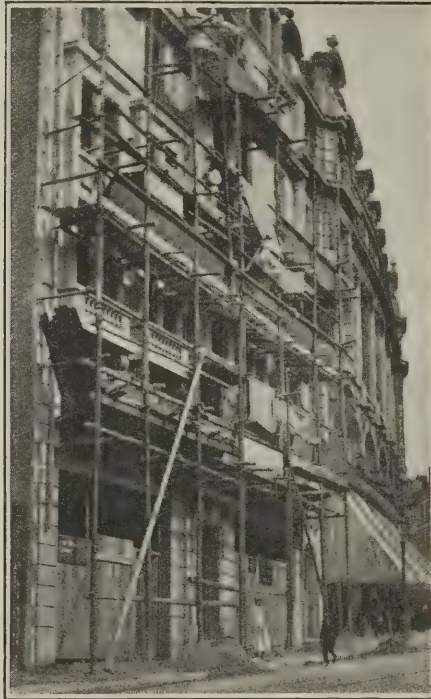


FIG. 10.

possible. The standards are erected about 8 ft. apart, but the ledgers upon which the stiffness of a scaffold so much depends are laid just where a platform is wanted, and not at regular 5 ft. intervals. The bracing is slight, as will be seen by reference to the photo, where a brace is shown tied at its top end and middle only; its efficiency, which is demanded by the



FIG. 16.

extent of the whole erection, would have been much increased if the bottom end had been tied to a standard also. The cordage, too, is badly kept, and the knots are made in a way that would make an English scaffolder blush. It is true that cleats are at times placed to carry an excessive stress, but this procedure is not general. In fact, the pole scaffolding in Belgium does not excite admiration.

A different opinion must be given, however, of plank and timber erections. These, following the lines of the French and of our own gabbard methods, are substantial, and are built on really scientific lines. They can be carried to great heights, as will be seen by the view (Fig. 11), which shows the west end of a Brussels church recently erected. The spire is shown finished, and its scaffolding taken down; but what remains is a perfect maze of substantial and accurate workmanship.



FIG. 7.

Each bay between standards and ledgers is singly braced. Proper stairways are built for an easy ascent, and guard rails are fixed to all working platforms. It is really difficult to see in what way such a scaffold could be improved upon. It is an object-lesson to English builders, with their fondness for the pole, to show what can be done with planks and bolts. As might only be expected, the general details of erection follow the French system rather than the Scottish. Figs. 12 and 13 (p. 659) show a corner standard and ledger, the scantlings being according to the weight the scaffold has to carry. The standards—about 9 in. by 3-in. planks—are used in threes to complete a 9-in. by 9-in. post, and the ledgers are about 9 in. by 3 in., used in pairs, one on each side of the standard. It will be remembered that in the gabbard system the ledgers are used singly, and by proper fitting are arranged to project through the standard—an easy method, as the posts are built up in lengths. Of course the gabbard ledger gets, in this way, an absolutely strong support, and is not dependent upon the strength of the bolts as in the Belgian system, although in this case cleats are used where necessary to secure additional strength.

Lighter scaffolding of the same type is shown by Figs. 15 and 16. These are for repairing purposes only, but may be expected to stand for some time. A front view of four bays is shown by Fig. 17. Fig. 18 shows the method of jointing between continuous planks. Fig. 19 is an illustration of a small timber tower seen in the larger churches and cathedrals for interior repairs. It can be easily taken apart and re-erected. It is not adjustable as to height, except by adding or dismantling the higher floors, and in this respect is inferior to similar structures in use with us, which can be wound up and down.

Viewed as a whole, Belgian scaffolding may be taken to be extremely practical, and quite on scientific lines. It excels the French in the care with which it is built; it has nothing of the light and dangerous appearance of the Italian; and has the ad-

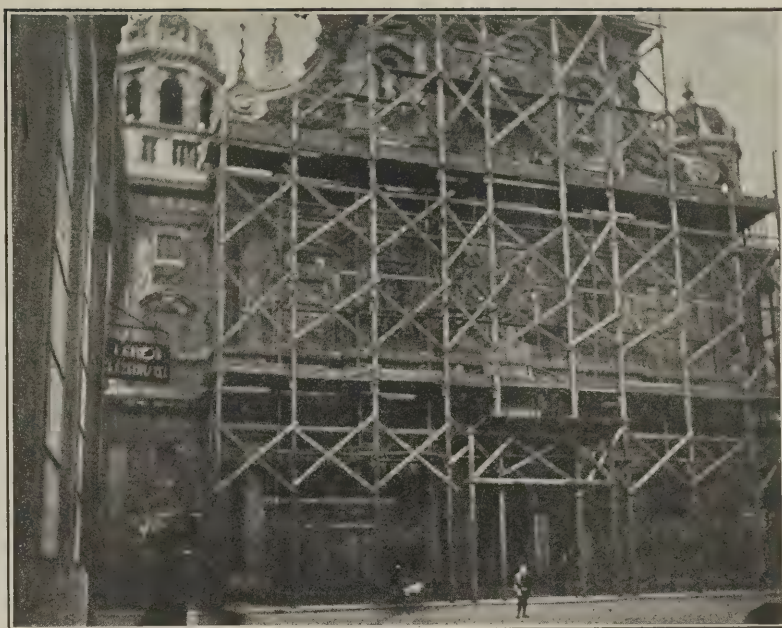
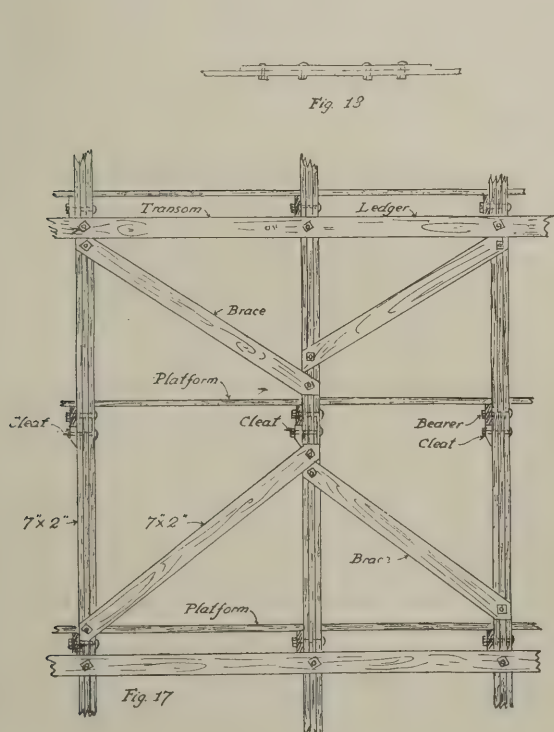


FIG. 15.



FIG. 20.



BELGIAN SCAFFOLDING.

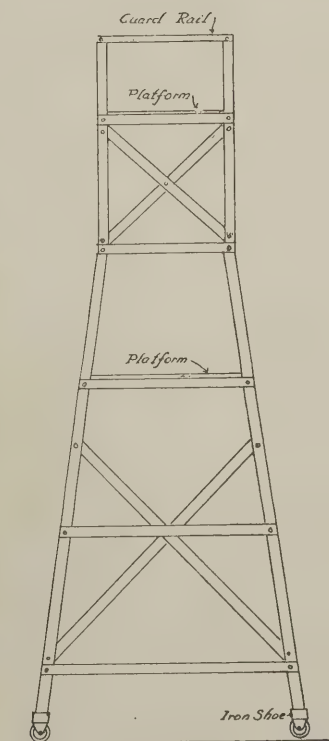


FIG. 19.

vantage of being more up to date than the English. It accords, perhaps, most completely with German methods.

As may be inferred from one or two figures in the photographs, the Belgian artisan falls into line with most Continental mechanics in the wearing of overalls. It is a cleanly habit, and one to be commended.

The last photo, Fig. 20, shows the common Belgian brick cart. Being built low, it is easily filled and emptied. Others approximating to English carts are to be seen, but are higher on the axle, and are in many respects quite different from the one shown here.

New Fellows and Associates of the R.I.B.A.

The following have been elected Fellows of the Royal Institute of British Architects: E. G. Allen, W. Pott, H. P. Roberts. The following, having passed the Final Examination, have been elected Associates: H. H. Archer (Southport), H. J. L. Barefoot, R. J. K. Harris (Sydney, N.S.W.), J. B. Healing (Leicester), P. D. Hepworth, C. H. Lay (Saxmundham), R. D. Nicol (Calcutta), G. Owen (Warrington), R. Shears, W. B. Stedman (Margate), R. Stockton (Stockport), and C. Voysey.

PARIS JOTTINGS.

M. Pray Retires.

The new architect-in-chief of the Prefecture of Police is M. Alphonse Jacques Gargué, who, in July, will supersede M. Pray, who retires with the title of honorary architect-in-chief—an example of the pleasant little forms of politeness in which the French excel.

A Paris Museum of Hygiene.

The Museum of Hygiene of the City of Paris, which has been established and equipped by MM. Juillerat and Leroux, has been opened permanently at 57, Boulevard Sébastopol. It should help very considerably the sanitary movement of which Parisians have evidently become conscious.

Motion Study: and an Innuendo.

Mr. F. B. Gilbreth's book on motion-study as applied to the building trade is attracting attention in Paris. Mr. Gilbreth claims that by reducing to five, or fewer, the eighteen movements formerly made in laying a brick, the number of bricks that a man can lay in an hour has been increased from 120 to 350. Commenting on this, "Le Bâtiment" says that in Paris a bricklayer and his labourer lay, normally, 620 bricks in nine hours. "By the American method, the same work could be done in two hours. Is this true? or is it merely—American?"

Workmen's Compensation.

The Parliamentary commission charged with enquiry into proposals for modifying the law of 1898 with respect to accidents has presented its report. The recommendations have reference to medical witnesses, to the period of compensation, which is extended to three years, and to the extension of legal assistance to the procedure of appeal. M. Defontaine, who drew up the report, has been invited to confer with the Labour Minister (M. Viviani) with respect to the resolutions which have been adopted by the commission.

Beaux-Arts Awards.

The jury of the Three Arts competition of the Ecole des Beaux-Arts has issued the following awards in the architectural section: First Class (Design): 2nd medals to MM. Petit and Potier (Deglane); Forest (Dufresne and Recoura). (Modelling): M. Grapin (Bernier). Second Class (Design): 3rd medal: M. Chandler (Laloux). (Modelling): 3rd medal: M. Chapman (Duquesne and Recoura). (Ornamental Design): 3rd medal: MM. Bocage (Laloux); Boschnakian (Bernier); Féray (Umbdentock). It is good to see the Saxon-looking names in the list, even though one feels instinctively that they probably belong to Americans.

Apprenticeship Proposals in the Senate.

MM. Henri Michel et Mascaraud have placed before the French Senate some proposals, based upon the opinions of various organisations of employers and employed, relative to the question of apprenticeship. A digest of these ascertained views resolves itself into the following series of proposals: (a) As an essential condition of apprenticeship, there must be a binding contract or indenture between the parties. (b) Surveillance of apprenticeship. (c) Theoretical and practical examination of apprentices and issue of certificates of competency. (d) Limitation of the number of apprentices engaged by any particular employer, and power of the authorities to withhold from any particular em-

ployer, temporarily or perpetually, the right to employ apprentices. Surveillance is held to be necessary as much in the interest of the employer as of the apprentice, and this duty will be confided to special committees, local and departmental. On the expiration of the indentures, the apprentice must submit to examination, and the examiners will report both on his proficiency and on the character of the instruction given by the employer. The special committees will have power to consider and decide upon any complaint that in any specified instance the number of apprentices is excessive; and in case of any grave abuse, the special committees are to prevent the offending employer from taking apprentices. A conference on apprenticeship, with particular reference to the building industry, is to be held in Paris on July 5th, the occasion being an exhibition of the work of the students of the technical schools pertaining to this special group of trades.

Cheap Dwellings Competition.

The twenty-first annual competition of the Société Nationale des Architectes has for its subject this year "A cheap dwelling for a numerous family" ("La maison d'habitation à bon marché pour famille nombreuse"). Two types of dwellings are specified—the tenement dwelling (maison collective) suitable for working-class districts in towns; and the separate dwelling (maison particulière) situated outside the great centres of population. The designs are to be delivered on September 10th. The competition is open to architects and to architectural students between the ages of eighteen and twenty-five.

Bogus Accident Claims.

It has been long known that in France the gentle art of malingering has been organised as an established system of extortion. Four years ago, M. Villemin, president of the Syndicat Général de Garantie du Bâtiment et des Travaux Publics, published charges of fraudulent malingering against certain excavators, and roundly accused certain medical men of aiding and abetting them. Thereupon the doctors threatened M. Villemin with an action for defamation, and ultimately the matter was investigated by the First Chamber of the Civil Tribunal. The president of the chamber, M. Monier, has now delivered his judgment. He finds that during 1907 and 1908 very numerous cases were reported of workmen simulating injury from accident and being supported in their fraudulent claims with oral evidence or written certificates by medical men; and that in exposing these frauds M. Villemin was acting in the interests of justice and the common good. The tribunal therefore finds that there is no ground of action against him.

A MOGUL MARBLE SCREEN
FROM DELHI.

At a time when Delhi and Indian architecture are attracting so much attention at home and abroad, it will be of interest to see the notable example of Mogul architecture shown on p. 648, which has been kindly sent to us by Mr. R. B. Thompson, of Messrs. R. M. Thompson and Son, architects and engineers, Mussoorie. The screen, in which the scales of Justice are the dominant feature, is in the Dewan-i-Khas (Hall of Private Audience, Delhi). The marble, though carved with the intricacy of lacework, is not so fragile as it looks, being more than 1½ in. thick. Of course, things of this description cannot be

produced with equal facility nowadays, when it is no longer possible to obtain supplies of marble without payment, nor to have the work done by *begars* (pressed labour).

THE TEAK TRADE AND THE
"TUSKER."

Probably no business in the world is more absolutely dependent on the services of an animal than is the teak industry on those of the elephant. In Java, it is true, says a writer in the "Times," the timber being smaller and the conditions different, hand labour and implements are employed, and in parts even of Burma and Siam the country is sufficiently flat to permit of carting by buffaloes being used as a method of extraction. But these parts are comparatively few and far between, and the obstacles in the way of introducing heavy plant into a country deficient in good roads, bridges, or facilities for transport, must be at once apparent. Even without these obstacles it is very doubtful whether teak, being so scattered as it is, could ever be profitably worked up and down steep hill-sides by machinery, while it is as certain as anything can be that no machinery could ever be devised to perform the part played by elephants in the water. Apart from the enormous bodily strength which enables it to drag, an elephant can with its forehead, trunk, or tusks push and roll enormous logs about as if they were play-things, nor does it mind working in water 5 ft. and even more in depth.

Given shade, abundance of water, and good grazing, an elephant has a fair chance of keeping its condition throughout the seven months which constitute its working season. The latter begins in June. From that time onward the animal's daily and weekly routine is something as follows: Directly it is daylight the rider leaves his camp, goes out to track his charge, which, despite his hobbled condition, will often succeed in straying a distance of some miles, bathes him all over in the creek—this is one of the most important of a mahout's duties—and brings him to the scene of the day's work. Operations commence at 7 a.m. or a little before, and go on till 11, by which hour the power of the sun generally renders it imprudent to continue further. For it must be remembered that the elephant is naturally a nocturnal animal, and extremely liable to sunstroke. On the completion of their day's work the animals are brought to the camp, divested of their gear, hobbled, and turned out into the jungle. After five days' work they receive two days' complete rest, or three days if the spell has been an arduous one. In January, or early February, they are removed to evergreen forests, where they will, even during the ensuing hot months, be able to find abundant food and water, and being called upon to do no work whatever soon become fat and ready for a new season's labours.

The elephant, despite its great strength, is a very delicate animal, and easily dies from one or another of a number of causes, from which, despite all their precautions, the teak companies of Siam must reckon annually to lose between 5 and 10 per cent. of their stock. The increasing scarcity, and consequently increasing value, of elephants is indeed already a matter of grave concern to all interested in the teak business. Whereas ten or fifteen years ago a good "tusker" might be purchased for 2,000 rupees, three times that sum is now sometimes demanded, while cows and "hines"—i.e., tuskless males—vary in price from 3,000 to 5,000 rupees.

THE WASTE OF PUBLIC WATER
SUPPLIES.*

BY W. WHITEHOUSE, M.S.E.

What is Pure Water?

When we speak of "pure water" we mean "wholesome water." Sir William Crookes has stated: "There is a great deal said about microbes, and a good deal of nonsense talked. When we hear that every glass of water we drink contains microbes by the thousand it is rather a shock. If we had too pure water, too much sterilised, we should all starve. A friend of his tried to bring his children up on hygienic principles, and had everything sterilised. The poor children were nearly starved, and at last they were given good wholesome water, with plenty of microbes in it, and they got as fat as possible."

Clark's tables give the average quantity of water required by an adult as follows:—

- 2 pints for drinking, in addition to about 2 pints retained in his food.
- 3 quarts for preparing and cooking his food.
- 1 gallon for cleansing dishes and food utensils.
- 2 gallons for house cleansing.
- 3 gallons for washing clothes.
- 5 gallons for cleansing the body.
- 5 gallons as a proportion, assuming a plunge bath is taken once a week.
- 6 gallons for w.c. use.

Total 23 gallons, being the average amount — of water required daily for each individual.

Misuse and Waste.

The author considers the theoretical quantity given above is too lavish, although it is much less than the Romans used in ancient times. Professor Rideal informs us that "ancient Rome, with its nine aqueducts, served its people with 300 gallons a day per head, including the supply for the public fountains, baths, circus, and amphitheatre, and for sanitary and trade purposes. A special State department administered the supply, and, as a result of these efforts, classic Rome was far more healthy than the modern city."

All will agree that this example could not be followed in these days, as there are very few waterworks that could stand the strain.

It seems that a warning to the public is necessary to prevent waste or misuse of such an increasingly valuable commodity as pure water. The tendency of everyone who designs or manufactures water fittings and sanitary appliances is to rely upon an excessive supply of water, but they should be designed in such a way that the utmost efficiency and economy is obtained from moderate quantities, rather than by the waste of large quantities. An ordinary plunge bath holds from 30 to 70 gallons of water, and if everybody had a bath every morning, using, say, an average of 50 gallons each, there would be very few waterworks in the country that would be able to stand it. What is wanted is a greater use of the portable hip bath, with about three gallons of water, or some development of the shower bath by which a person could have a complete bath with a small expenditure of water, and so fulfil the ideal of the sanitarian, that every healthy person should have a head-to-foot bath once a day.

A very general idea prevails among water consumers that waste, although bad for the waterworks, is good for the drains and

sewers, but that is not true, because if the waste is due to defective fittings, it goes on in the daytime, plus the consumption, which in itself is, or ought to be, enough for all purposes. During the night, when the leakage is going on as before, and the consumption is small, the water is so distributed over a large area that it is of no use whatever as a flush to the drains and sewers, but is simply a waste of water, which could be more effectively used in a legitimate manner.

Causes of Waste.

There are various causes of the waste of public water. One is a misapprehension—as noted above—that a continual small stream of water along house drains improves the sanitary condition of the house. This is a mistake. A short sudden rush at intervals has a beneficial effect in flushing drains, but a continual dribble has none. There is no use, therefore, in allowing small streams of water to flow continually down water-closets, or other sanitary appliances. By improvements in the form of water-closets and of flushing apparatus, the former have been made quite self-cleansing with a flush of two gallons, or even of less, appliances being insisted upon that make it impossible to give a greater flush.

However, it must be admitted that by far the greater part of the waste that takes place is due to carelessness on the part of the consumers of water—often carelessness that can only be considered as culpable, if it be borne in mind that wilful waste of water supplied by waterworks is simply stealing. The water is actually public property if the works belong to a corporation or council, as the case may be; and even if they belong to a company the water is public property in the sense that the price which each individual has to pay to the company must in great part depend on the consumption of the whole, including waste.

Leaky Taps.

Although not generally the case, many householders are indifferent to the waste of water; it is therefore a matter of indifference to them whether, for example, a tap is running the whole night or not. Where the cost of leathering a tap is charged to the consumer, there are some who consider that it is to their advantage to allow the leakage to continue. In the works under my control—although the average consumption is low—we lose every night, between the hours of 12 p.m. and 6 a.m., from 15,000 to 20,000 gallons of water. The major portion of this quantity must be waste.

Apart, however, from this, a great deal of leakage takes place simply because it is difficult to appreciate how large a quantity of water is lost on account of an apparently very small leakage continuing through the whole twenty-four hours. It would astonish most people who see water merely dripping from a tap, or from a leaky pipe, to be told that the loss is likely to be 3 or 4 cub. ft. in twenty-four hours, or fully the average consumption of water of one individual. Yet if a measuring glass be taken it will be found that from 2 oz. to 3 oz. per minute of water may fall merely in the form of drops, and this corresponds to a large consumption in twenty-four hours for one person. It needs but a very small dribble to discharge 20 cub. ft. of water in twenty-four hours, or say, the quantity that ought to be consumed by an average household.

Prevention of Misuse and Waste.

The question of waste prevention has always been a source of trouble, and one of anxious consideration for the engineer.

Burton, in his treatise on water supplies, writes as follows: "Of late years large reductions in the consumption of water per head have been made by careful arrangements for saving waste. Waste has been saved in several ways; for example: (1) by the use of district meters; (2) by the use of house meters; and (3) by insistence on the use of house fittings of good quality only, and on their frequent inspection. I may say concerning the third item, that the difficulty in preventing waste in waterworks has seldom been felt to any great extent in connection with the street mains, or the larger appliances belonging directly to the proprietors of the waterworks. These are fixed under the charge of skilled engineers, and are under their supervision afterwards. It thus occurs that leakage is not very likely to occur in them, and that if it does it is soon stopped. In the case of house fittings it is quite different. These are put in by the builder or the householder, who employs whomsoever he likes; it is not in the least to the advantage of the former of these to be sure that no water waste takes place, and it is to the reverse of the interest of the latter to prevent leakage, because he has nothing to pay for leakage, while he has to pay for preventing it. Very stringent regulations have been introduced in most English and many Continental towns for the prevention of waste in houses, and these have been put efficiently in force in a considerable number of cases."

Notwithstanding the severe climatic changes in England, few precautions are taken against the grave inconvenience of waste occasioned by frost. House pipes are often left unprotected, and so placed that a burst will cause considerable damage. Cisterns are frequently situated outside, and when they freeze solid are the cause of serious annoyance. The pipes and fittings in the ground should always be laid a good depth, and all exposed pipes and fittings should be protected with some non-conducting material.

Waste-Water Meters.

The Deacon waste-water meter is familiar. There is no doubt about its excellency in the discovery of waste, as one meter will control a large part of a district, but there are many authorities who would hesitate to instal this system—in consequence of its cost and manipulation. It has even been suggested that every house should be supplied by meter just in the same way that it is supplied by gas. That is an exceedingly expensive way of controlling the supply on a large scale, and leads to the other extreme of undesirable parsimony in the use of water. To instal the meter system in my own district would cost £5,000, the cost of maintenance and inspection would necessarily be higher, which would mean raising the price of the water *pro rata*, as consumption was large or small, to cover the extra cost of maintenance.

Leathering Taps.

Quite recently a surveyor informed the author that the waste of water in his district was so large as to be quite absurd. It has never been the custom of his authority to leather taps, but some time ago he made an inspection of his district, and with some assistance leathered, or saw to the leathering of, the taps himself. In one month, he tells me, he saved by these means no fewer than 400,000 gallons. Assuming it cost 6d. per 1,000 gallons to pump and distribute the water, the saving is quite equal to paying the wages of two men permanently employed, apart from the saving to the consumer's fittings, and also

*Extracts from a paper read at a Western District meeting of the Institution of Municipal Engineers, June 20.

the saving of this precious and absolutely necessary fluid.

Speaking of the works under his own control, the author was pleased to say that it had always been the custom to leather and repair consumers' service taps, etc., and to fix new taps free of charge (excepting the cost of the tap). The result has been highly economical and satisfactory. The average consumption, excepting periods of continued drought, does not exceed 12 gallons a head per day, including that used for trade purposes, and they supply a population of 10,000.

These methods have enabled the water-works to keep in touch with, and to gain the confidence of, the consumers; the reporting of leakages is encouraged; and it has had the effect of making each and all of them an inspector, as it were. Leakages are promptly reported, and if they are not promptly attended to, of course there is a row. Notwithstanding the result, there are some who disagree with these methods, but no one can dispute that the system means convenience, advantage, and even privilege to consumers, and it is undoubtedly a joint means of preventing waste.

Checking Waste.

In conclusion, the author summarised a few things which would certainly have the result of checking waste:—

(1) *Night Inspection.*—This need only be periodical, but it would be the means of discovering underground leakages, as well as other causes of waste. The method to adopt would be for the inspector to proceed round the district during the night with a sounding rod, and to hand over the result of his discoveries to the fitters for further inquiry into the matter the next morning. This would have the effect of finding out wilful waste as well as that due to defective fittings.

(2) First-class fittings of approved construction should be rigidly insisted upon, as well as the laying and fixing of pipes for protection against frost.

(3) The enforcement of 2-gallon closet flushing cisterns, and automatic flushing cisterns of stated capacity for urinals. Great economy in the use of water could be effected if it were possible to provide a satisfactory and water-saving substitute for the plunge bath.

(4) Outside closets could be an approved make of the waste-water type.

(5) Public inspection and repair of draw-off apparatus, such as leathering, etc., free of charge.

(6) Covered reservoirs for spring water to obviate the waste caused by the necessity of cleansing of algæ, or water weed, which rapidly forms in hot weather. (This advice may be somewhat superfluous, as spring water reservoirs are very rarely left uncovered nowadays.)

(7) Plenty of air valves and sluice valves to prevent the emptying of long lengths of main when repairing or tapping.

(8) Apparatus for tapping mains under pressure, and so save emptying them when doing this work.

(9) Pressure reducing valves in very hilly districts, wherever possible to fix them.

Inspection in New York.

Supplementing the advocacy of inspection in the above paper, it is interesting to note that water waste prevention in New York has been carried on by the inspection method during the past year or more, and its results, as described in the annual report of Commissioner Thompson, of the Department of Water Supply, Gas, and Electricity, show that where carelessness exists in using water the system can ac-

complish much good. The work has resulted in reducing the average daily consumption from 540,000,000 gallons to 480,000,000 gallons. Two methods have been followed. Along the water front, districts have been isolated one at a time and investigated by the pitometer method, and some heavy leakages have been detected in this way. One of them, an underground leak at the Battery, is estimated to have been discharging 880,000 gallons daily into the harbour for many years, an amount of water worth over \$42,000 annually at meter rates. The second method of checking waste has been a house-to-house inspection. In a little more than two months 97,245 buildings were visited. Second inspections were made in many cases to ascertain whether repairs had been made as directed. Both methods of checking waste have cost about \$30,000, and the water saved by them is estimated to be worth about \$2,000,000 a year. The main value of the work has been in conserving the supply until the Catskill works are finished, and for this purpose it has unquestionably proved efficient and cheap. But it is not a complete substitute for a universal meter system, and the records of the house-to-house inspection show this. Out of 55,371 buildings examined during the first inspection, 36,431 were found to contain 158,363 leaking fixtures; on a second inspection of 41,874 buildings, leaks were still discovered in 14,000 of them. This shows that even when it was known that a failure to repair leaks would mean

a fine in addition to the expense of repairs a large number of people failed to have the work done. When the danger of re-inspection has passed, the old conditions will undoubtedly become established again. The carelessness which permits waste will develop, and the same people who are watchful about unnecessary use of gas and electricity, because both are bought by meter, will look upon water as something as free as air. Commenting upon this report, the "Engineering Record" remarks that meters ought to be installed, not only that the city may demand payment for the exact amount of water taken by each consumer, so that all are treated alike, but also that the day may be far removed when additional expensive works for increasing the supply become needed.

OUR PLATE.

The New Quadrangle, Merton College, Oxford.

The new quadrangle of Merton College, Oxford, occupies the site of Alban Hall, which some years ago was annexed to Merton College. In forming the quadrangle, the only portion of the Hall which could be retained was part of the front on Merton Street. This, however, has been considerably modified as regards the attic storey, which had been rebuilt not very long ago.

The general idea was to construct a three-sided quadrangle, open to the south



Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, June 26th, 1912.



BUILDINGS IN NEW QUADRANGLE, MERTON COLLEGE



...E, OXFORD. BASIL CHAMPNEYS, B.A., ARCHITECT.

on to the Fellows' Garden, from which it is divided by an ornamental iron railing.

The new quadrangle contains, besides a number of rooms for undergraduates, a set of rooms for a Fellow, a junior common-room, and, in the basement, baths and sanitary fittings.

The material used is Weldon stone, with Clipsham in the positions that are most exposed to the weather. The architect is Mr. Basil Champneys, B.A., and, as a matter of individual judgment, we venture to think that it is his *opus magnum*, or that, at all events, among the many fine works whose merits have been collectively recognised in the bestowal upon Mr. Champneys of the Royal Gold Medal of the Institute this year, he has done nothing better, although we are not forgetting his authorship of many other collegiate buildings at Cambridge as well as at Oxford, and of the Rylands Library at Manchester. The Royal Gold Medal, by the way, was presented to Mr. Champneys on Monday last. A portrait of the new medallist, and some particulars of his career, appeared in our issue of March 6th of the current year. The builder was Mr. G. W. Simpson.

BOOK NOTICES.

Farm Buildings.

Although, at the very outset, we are warned very ingenuously that "this small volume is addressed to landowners, their agents, and tenants, and not primarily to architects and builders," it is perfectly obvious that it is this very fact which constitutes the value of the book to the architect and the builder, neither of whom desires, from such a source, instruction in his own business, but both of whom, supposing that they have this class of work to do, or a prospect that they may some day possibly have to undertake it, will be glad of intelligent information from the agricultural standpoint. The client, it is true, nearly always thinks he knows what he wants, but his fallibility is signalled by the appearance of this book; and, of course, it is impossible that, knowing, as a rule, little about any estate or condition other than his own, he can be in a position to generalise circumstances, evolve principles, and apply them in accordance with the most economical methods. Having a far larger experience of what has been done, the author is well equipped to impart information—to assume the rôle of teacher which in his preface he modestly disclaims, and it therefore seems very probable that architects may derive direct as well as indirect advantage from his knowledgeable discussion of the data. It is evident that he knows not only the requirements, but various ways of meeting them, and he is usually able to put forward excellent reasons for preferring one system to another, in site, planning, construction, or sanitation.

The style and substance of the book may be not unfairly inferred from a single short extract: "To enable the architect or clerk of works to prepare the necessary plans, the live stock, dead stock, and barn accommodation, together with every appliance to make such effective, must be determined. This will, of course, depend upon the nature of the holding, and the course of husbandry pursued upon it. The first point, and one difficult to determine, is the maximum of live stock which the area will support; and for this, maximum provision should be made." To prepare anything less than this is to render necessary an

annex from time to time, and so mar the original design."

Farming economy, and the philosophy of farming, naturally take up a great deal of the author's attention, but the disquisitions always bear some more or less close relation to buildings, "which are to the land, which is the raw material, what a factory is to cotton, linen, and the like." Practical hints, however, as distinguished from mere theorising, abound; and the score or more of illustrations, which have been mostly drawn by the author, are distinctly utilitarian. The frontispiece, apparently reproduced from a painting, shows a delightful old English barn, but otherwise art is left to the architect.

Farm Buildings for Landowners, Agents, and Tenants. By Charles Edward Curtis. London: Vinton & Company, Ltd., 8, Bream's Buildings, Chancery Lane, E.C. Pp. viii. + 144, 7½ ins. by 5 ins., price 3s. 6d. net.

Municipal Engineering Problems.

We cannot see that the title of "Problems in Engineering" is at all well chosen. The popular conception, or misconception, of the term "engineering" is that it refers specifically, if not exclusively, to the making of machinery—is a matter of the shaping and fitting of iron and steel. No matter how erroneous this view may be, it is general and effectual; and therefore the title of this book is likely to be generally misunderstood. The mechanical engineer who bought it on the strength of its title would be disappointed, and, on the other hand, the civil engineer, or municipal engineer, or surveyor, might hesitate to infer from its title that the book was primarily intended for him, as on examination it appears to be. The ten sections into which the book is divided deal respectively with mechanics and hydrostatics, strength and elasticity of materials, theory of structures, surveying and levelling, water supply and hydraulics, sewerage, sewage disposal, road-making and tramways, building construction and materials, and the last section is headed "Law and Miscellaneous." Under each heading are grouped vital questions, which collectively represent a fairly complete survey of the subject; and these "problems," tersely stated, are worked out with clearness and brevity, with the aid of diagrams whenever these appear to be necessary. Instruction by question and answer is the most natural method of imparting knowledge to students, for whom this manual is obviously intended; and the book contains a vast amount of information, the very many points in which ought to have been rendered more easily accessible by means of an index.

Problems in Engineering, with Solutions. Being Questions and Answers Reprinted from the Assistants and Students' Section of the "Surveyor and Municipal and County Engineer." First Series, 1909-10. Edited by Sydney G. Turner, Assoc. M. Inst. C.E. London: St. Bride's Press, Ltd., 24, Bride Lane, Fleet Street, E.C. 186 pages, 7½ ins. by 5 ins., price 3s. net.

Women Invade the Building Trades.

The president of the New York Association of Building Trade Employers announces that in October next a school will be opened in which women will be taught the trades of plumber, carpenter, mason, etc. Thirty-six students have already entered. Hitherto the incursions of ladies into the building trades seem to have been somewhat irregular. The case of "Charlie" may be remembered. "Charlie" was a lady who, disguised as a man, worked for years as a paperhanger. A more recent case is that of a young lady who, dressed in male attire, held a job as a plumber's mate—a position to which many girls may legitimately aspire without necessarily working at the trade.

THE SCIENCE MUSEUM: NEW BUILDING SCHEME.

The final report has been issued of the Departmental Committee appointed to advise as to the present condition and future development of the valuable collections comprised in the Science Museum at South Kensington, and the Geological Museum in Jermyn Street. The precise boundaries of the site available at South Kensington have been determined, and hence the Committee are now able to report upon the adaptation of the general plan of the new buildings to the requirements of classification and exhibition of the collections.

By arrangement with the Trustees of the British Museum, the building for the Museum of Practical Geology and the offices and library of the Geological Survey is to be placed on part of the site allotted to the Natural History Museum, and accordingly the whole of the Science Museum site will be available for the immediate and future needs of the last-mentioned institution. The site extends from Exhibition Road to Queen's Gate, a distance of 1,150 ft. For a considerable part of its length at the east end it has an effective breadth of 190 ft., and at the west end it is 170 ft. broad; the intervening portion has a breadth of 100 ft. The two end portions afford suitable ground for a combination of large halls with surrounding galleries, which would at once make full use of the space and form suitable accommodation for exhibiting the collections effectively.

An examination of the intervening and narrower portion of the site, in relation to the buildings to the north and south of it, shows that the central part may well be occupied completely by lofty buildings, such as would be required to enclose a hall worthy of its place in the centre of the Museum. The sections connecting the central block with the east and west blocks, however, ought to be comparatively low along their north side. Even so, these may be occupied on their south side by ranges of side-lit galleries carried to the same height as the main building, and broad enough to give a total internal breadth of 70 ft. Thus the scheme may provide for continuous exhibition hall and galleries along four floors.

It is estimated that the floor space required for the immediate needs of the Museum is 265,000 sq. ft. The complete scheme of buildings will provide a total space for the exhibition of collections of 377,000 sq. ft., so that the margin for expansion is 42 per cent. The corresponding excesses to meet ultimate requirements under other heads of accommodation are on a still more liberal scale.

In the Committee's opinion the building scheme for the complete occupation of the site might conveniently be carried out in three sections, and they recommend that these should be put in hand in succession, beginning with the eastern block. In the eastern end of the buildings now on the site there is only a relatively small part of the collections, and for this part it would not be very difficult to find temporary accommodation. The erection of the new buildings in the order suggested would thus entail a minimum of disturbance in the ordinary work of the Museum. The new eastern block when completed would suffice for the accommodation of all the collections now in the "Southern Galleries," so that these galleries might in turn be demolished to make room for the central block of the new buildings without requiring any serious interruption, either in the

exhibition or in the current development of the collections.

It is suggested that it would be well to delay final consideration of the central and western blocks till the eastern block has been occupied, so that action may be taken in the light of experience of work under new conditions.

POPLAR'S ELECTRICITY WORKS EXTENSIONS.

In order to supply the increased demand for electrical energy in the Poplar district, which has risen from 1,379,620 units at the end of March, 1906, to 7,378,839 units at the corresponding period of this year, some important extensions of plant are now being carried out by the borough electricity department. The area of the borough is approximately five miles long by one mile wide, and the system of supply adopted is alternating current at 6,600 volts and 50 periods at the generating station at Bromley-by-Bow, which is fed direct to substations in Millwall, Blackwall, and Old Ford, where it is converted to 460 volts direct current.

The maximum power demand during last winter was 4,500 kw., an increase of 820 kw. over the previous year.

In order to avoid waste of capital in small extensions two 3,000 kw. Willans and Robinson combined impulse and reaction turbines coupled to General Electric three-phase alternators are now in course of erection, the guaranteed efficiency of which, over three-quarter, full, and overload, is 13.55 lb. steam (average) per kw. hour. The switchboard is of remote control type, and is being erected by the British Westinghouse Company. Two Babcock and Wilcox watertube boilers of 41,600 lb. an hour maximum evaporative capacity are being installed in the initial stage of the extensions, and it is proposed to install a further pair of this size and type as the load increases.

The plant is housed in an entirely new building of solid steel framework, filled in with brickwork, which has been erected alongside the present works and provided with a Royce overhead travelling crane of thirty tons capacity. There is no chimney shaft, as each boiler is fitted with a separate steel uptake.

The lay-out of the plant has been designed by the borough electrical engineer, Mr. J. Horace Bowden, and the total cost is under £10 per kw. installed.

STATE BRICKWORKS.

A Government brick plant for supplying the Department of Public Works, New South Wales, was placed in operation in April, 1911, to produce bricks more cheaply than it was possible to buy in the open market. About 36,000,000 bricks are required annually for State purposes, and it is estimated that the manufacture of bricks by the Government will effect a saving of 50 per cent. over the prices asked by local makers. It is stated that the surplus output from the Government kilns will be made available for sale to the general public at reasonable rates. In addition to ordinary clay or shale brick, sand-lime bricks are to be manufactured. For this work the Department is burning its own lime. It is difficult to share the optimism about results. The United States Government Printing Office has a history that should make anticipation less sanguine, and the London County Council's little adventure in brick-making at Norbury simply killed the notion so far as our own country is concerned.

THE HOUSING OF THE WORKING CLASSES BILL.

The Standing Committee of the House of Commons, presided over by Mr. Eugene Wason, continued the consideration of the Housing of the Working Classes Bill last week. Mr. King proposed a new clause providing that, for the purpose of assessing compensation or of valuing land to be acquired for the provision of dwellings for the working classes, the arbitrator, court, or valuer should base his award and fix the valuation upon the total value of the property as valued for the purposes of the Finance Act, 1910, and upon any subsequent or consequent valuations made under it, and should add such allowance for disturbance as was proved equitable. He said the uncertainty as to the valuation or compensation to be paid for land had proved a great drawback to the promotion of housing schemes by local authorities.

Mr. Hills agreed that the cost of land had interfered with housing schemes, but contended that this proposal, instead of giving the slum owner smaller compensation because of overcrowding, would give him far more than the Bill at present did. The total value under the Finance Act meant the selling value in the market, which obviously was enhanced by overcrowding.

Mr. J. Samuel, from the Ministerial side, and Sir Arthur Boscawen both urged that the clause would hamper the working of housing schemes. The latter said that by the proposal the local authority would, forty or fifty years hence, have to pay more for large houses which had degenerated into slums than their present value.

Mr. Booth, who supported the clause, said he personally surveyed 100 houses in Soho at the time of the formation of the London County Council, and found that houses which were formerly gentlemen's residences at £100 a year were as tenements making from £200 to £250 a year.

Mr. Burns (President of the Local Government Board) said no one defended the present method of acquiring land for housing. The cost often prohibited housing reform. The Government would support Mr. King's proposal. They were not only in favour of preventing the slum owner in the centre of the town from obtaining excessive compensation—and Clause 9 of the Bill restricted it to more reasonable proportions—but they believed that the housing schemes of the future were more likely to be undertaken on the outer areas of towns. Prices of from £400 to £600 an acre in these semi-rural areas were prohibitive for the erection of cottages costing £150 or £200, and the clause would place the rural or semi-rural landlord in the same position as regarded the payment of excessive compensation as the promoters of the Bill had insisted upon for the slum owner in the heart of a city. What was needed was some means by which land in either area could be obtained for housing at more reasonable prices.

Lord A. Thynne contended that, whilst the Committee rightly penalised the slum owner, when land was required from other owners they ought to trust to the ordinary process. Mr. Charles Bathurst also argued that the only equitable way both for owners and ratepayers was to take the fair market value of the land for the time being.

Sir A. Boscawen said the Committee were taking a leap in the dark, and no one knew what the effect of it would be.

The clause was added to the Bill by 25 votes to 21. A Government amendment

enabling one inhabitant householder, instead of four, to make an appeal to the Local Government Board wherever there was a deficiency of housing accommodation was agreed to, and the Bill then passed through Committee.

NEW YORK'S NEW BUILDING CODE.

The joint committee of specialists in building design and construction who have been studying for more than a year and a half the proper provisions for a building code for New York City have submitted their draft to the Board of Aldermen. The names of this Committee, representing the architectural, contracting, engineering, underwriting and official interests, are said to carry the weight of authority with them. Fortunately there is no likelihood of any attempt being made to rush this proposed code through the Board of Aldermen, and consequently it should have the benefit of painstaking and exhaustive discussion.

It is described as a compromise between the divergent views of specialists, reached after careful and prolonged consideration and consultation with architectural, engineering, and business firms particularly interested in the individual sections of the proposed requirements. As in every compromise, there are features which are open to criticism; Mr. Ernest Flagg, the eminent architect, has made a number of such criticisms, several of them of much importance, and doubtless other suggestions for improvements will be made in the course of time. Just how many of these can be profitably adopted, an American editor comments, is a question which need not be considered, for the main fact to keep in mind is that a building code must always be a compromise, and it is out of the question to please everybody. The most that can be done is to ensure decided improvements upon existing codes, and this the proposed regulations do in many respects.

They provide for a certificate of occupancy which, it is anticipated, will go a long way towards preventing the misuse of buildings for purposes for which they are unsuitable and for which they were not designed. They give the superintendent of buildings of each borough ample opportunity for the exercise of his judgment in technical matters, yet they provide against favouritism by requiring all his decrees to be published in such a way that anybody interested may have an opportunity of becoming familiar with the rulings as they are made. A particularly earnest endeavour was made to have the various competitive materials of construction treated with absolute fairness, permitting each of them to be used in the most economical manner to give the desired result with the desired safety. Former proposed codes have been strongly attacked on the ground of favouritism toward certain materials. The gentlemen who have given their time to the preparation of this code are above any such attack.

The new proposed code stands upon an entirely different footing from its two predecessors, and it deserves to be discussed with the sober carefulness which was given to its preparation. If it receives such consideration there is a fair prospect of its adoption and of removing thereby from the municipal statutes a code which is obsolete and imperfect in many respects, and is proving prejudicial to good building regulations throughout America because of the tendency of many communities to copy some of its provisions without ascertaining how well or how badly they meet the requirements of public safety.

SOUTH AFRICAN EXPORT SUPPLEMENT.

This South African Export Supplement fulfils a twofold purpose. It indicates in an interesting way for British readers the present building position in South Africa; and it renders an important commercial service to both countries by introducing the producers in the one country to the consumers in the other.

BUSINESS OPPORTUNITIES IN SOUTH AFRICA.

OF all the territories, various and vast, that acknowledge fealty to the British flag, there is none that gives promise of greater or more rapid expansion than the Union of South Africa. When, by the South Africa Act (9, Edward VII., cap. 9), Cape Colony, Natal, the Transvaal, and the Orange River Colony were combined as the Union of South Africa, with the seat of Government at Pretoria and the seat of the Legislature at Cape Town, then dawned an era of prosperity and development of extraordinary and probably unparalleled promise. There is room on this vast continent for almost indefinite expansion. As the resources of the Union are increasingly discovered and exploited new towns spring quickly into existence, and the old ones, growing ceaselessly in area and in importance, signalise the accession of wealth and dignity by the substitution of magnificent buildings for the far less imposing structures that have served their turn and had their day. The country offers an unsurpassed field for commercial enterprise, particularly for manufactures and materials relating to the building trade. For these the South African architect and builder must depend very largely on importation; and it is for the British exporter of such goods to make the most of his opportunities in this direction. This special South African Export issue of the JOURNAL will enable him to make known the merits of his specialities among those by whom such information will be eagerly welcomed. To many British manufacturers this Export issue will introduce a new and profitable market; to many architects and builders in South Africa it will introduce new and excellent goods. The introduction, in fact, should be of the greatest possible mutual advantage.

Corresponding to the magnificent exteriors of the many fine buildings that are now characteristic of the chief cities of the Union of South Africa, there is great sumptuousness in the interior fittings and furnishings; and the luxuriousness of the hotels and town houses finds its reverberations not only in the suburban residences of well-to-do citizens, but even in the remote farmhouses, whose prosperous owners vie with each other in a sort of informal "ideal home" competition. Consequent upon this growth of taste, or at least of the love of comfort, South Africa offers a fair field, also, for the vendor of furniture and domestic plenishings.

Enormous Building Developments.

Building in South Africa, in fact, goes on apace, and reports from all centres are of optimistic tone. In Johannesburg, Pretoria, Maritzburg, Durban, Cape-town, Port Elizabeth, and East London there is at present a vast amount of building in progress. These towns are, therefore, the largest contributory factors in

the matter of indents for manufactures and building materials which help to swell the ever-increasing volume of the general South African trade; upon which all British and Continental exporters have—and will continue more and more in the future to have—an alert business eye. There is, indeed, at the present time great scope for the energy and resource of Home exporters, for the general condition of trade has all the appearance of an abundance of money continuing in circulation. All those merchants who know everything about advertising and pushing goods, and how to keep their names prominently to the front by means of trade journals, have during the past year been doing an extensive and flourishing business, and many of them have sent competent men out to the country itself to establish branches and agencies on a sure and business-like basis. Evidently there has been ample justification for this, as they may now be seen settled with splendid stores and warehouses in the best parts of the different towns, particularly in Johannesburg.

State of Trade.

During 1911, on the Rand alone the value of plans passed was £2,571,611. Johannesburg showed an increase over the preceding year of about £470,000, the plans passed during 1911 being of the value of £1,810,754. The figures for Pretoria reached a total of £149,434, while in 1910 they were £1,121,407, which, of course, includes several large Government building contracts, such as the Union Buildings. The works in hand during the year in the four important outside mining localities referred to above all show six figures, and have not fallen back so much as might have been expected after the abnormal progress in the year 1910. A gratifying feature revealed by the figures is the fact that in the coastal towns there has been marked activity. Durban, Port Elizabeth, and East London give striking proof of this, and Capetown is within an ace, figuratively speaking, of her standard in the preceding year. Kimberley has also made a considerable stride with £68,440, as compared with £20,000 in 1910. Bloemfontein shows big improvement, the figures amounting to £36,184, as compared with £9,215 in the year preceding. In Natal there has been considerable progress, especially in Durban, the figures for the post for 1911 being £224,197, while in 1910 they were £189,201.

Expansion of Pretoria.

Pretoria contributes about £150,000 a year towards the erection of new buildings, and this is irrespective of £1,500,000 for Government works at present in progress. The eyes of the world are now on Pretoria, be-

cause of its great political and industrial development, and a new period of progress is certainly in store for the Administrative Union capital. In order to keep abreast with this state of advance and prosperity, many new buildings will naturally arise in the course of the present year, and amongst them, it cannot be doubted, there will be substantial, dignified, and modernly equipped structures, besides numerous well-built residences for a growing population. The Home exporter should find Pretoria only second to Johannesburg as a veritable mine of wealth for the disposal of his wares.

Building in Natal.

Apart from these large centres, Natal offers tempting inducements to the exporter during the present time of great structural progress. Durban especially is going ahead at a great rate, and Maritzburg is a fairly good rival at present in the matter of building enterprise. The former has an estimated cost of buildings for 1911 to its credit of £224,197, compared with only £189,201 in the year preceding. Certainly the prospects of the future of Durban from a building point of view are very encouraging. As a seaside holiday resort it is growing every year in popularity, and its Municipality is one of the most progressive in all South Africa. This is reflected in enlarged building operations and larger sales for all classes of manufactures. Building in Maritzburg during the past year revived to a remarkable extent, operations being largely in excess of previous records.

Growth of Building in Cape Colony.

In the Cape Colony we find that 1911 has been a year of exceptional building growth. Official figures put the value of buildings for Capetown alone at £96,492. East London more than doubled in building activity during last year, the estimated cost being returned as £46,294.

It will be seen that in the Transvaal, Natal, and the Cape Colony there has been a most satisfactory expansion, and the future is even more encouraging in every department of the building trade. The Orange Free State has also not lagged behind, for we find that the Bloemfontein Corporation passed plans last year representing a value of £9,215.

Value of Building Imports.

It having been shown how building has progressed in South Africa during the past year, with an indication of the vast possibilities for the future, it will be of general interest to give some statistics respecting the imports for the Union in 1911. The Department of Commerce and Industries of the Union of South Africa issues monthly statistics of the value of certain building imports, and it will be found from the appended returns that the total building articles imported during the twelve months of 1911 were valued at £2,735,013, compared with £2,734,809 in the preceding year. The two years, therefore, appear to have been pretty level as far as imports in the building line are concerned.

Figures for twelve months ended December 31, 1911 and 1910:—

	1911. £	1910. £
Bricks for Building	22	671
Cement	104,405	116,811
Electrical Fittings	259,907	357,347
Furniture: School and Church Decorations ...	21,024	13,215
" (N.O.D.)	410,722	321,803
Glass: Plate	25,192	20,452
" Window	21,974	20,451
Glassware (N.O.D.)	58,960	50,225
Girders, Beams, Joists, etc. (including Frame-work of Iron Buildings)	75,282	91,129
Galvanised Iron, not corrugated	63,013	55,210
Galvanised and Corrugated	365,874	362,026
Paints: Ochre	7,723	8,927
" Turpentine	31,956	17,903
" Varnish	27,362	24,750
" All other (N.O.D.)	120,544	116,792
Paper: Hanging Wall	35,287	39,417
Wood and Timber:		
Teak	16,916	30,371
Other Manufactured	640,591	695,684
Flooring and Ceiling	187,300	174,615

	1911. £	1910. £
Other Planed and Grooved.....	32,048	29,369
Houses, Frames, and Parts thereof	70,730	65,434
Works of Art: Paintings and Pictures	21,268	10,771
" Statuary and Sculpture	1,823	4,815
Zinc and Zincware: Unmanufactured	133,292	100,131
" Manufactured (N.O.D.) ...	1,798	550

Customs Returns for January, 1912.

The following are the Official Customs returns for the Union for January of the present year:—

Capetown: Imports, £565,142; exports, £3,505,014; gross customs revenue, £70,658.

Port Elizabeth: Imports, £683,624; exports, £1,323,152; gross customs revenue, £67,233.

East London: Imports, £310,060; exports, £271,532; gross customs revenue, £36,384.

Durban: Imports, £771,839; exports, £583,909; gross customs revenue, £87,400.

Johannesburg: Gross customs revenue, £63,642.

Laurenço Marques: Imports, £515,016; gross customs revenue, £15,604.

Other ports and stations: Imports, £31,442; exports, £128,863; gross customs revenue, £17,374.

G.P.O.: Gross customs revenue, £9,094.

Total imports, £2,877,123; total exports, £4,812,470; total gross customs revenue, £367,989.

The Capetown exports include gold. The duty collected by magistrates in the Orange Free State is not included.

Trade and Customs Returns, Union of South Africa.

Statement showing the total value of the imports of merchandise and of the exports of South African produce into and from the various ports, and also the total value of the imports and exports into and from the Union of South Africa during the month and twelve months ended December 31, 1911, as compared with the corresponding periods of 1910:—

PORTS.	IMPORTS.		EXPORTS.	
	Month ended Dec. 31st.		Twelve months ended Dec. 31st.	
	1911.	1910.	1911.	1910.
<i>Via</i> Capetown	£513,365	£459,368	£6,004,675	£5,506,122
" Capetown, through Parcel Post	66,512	66,220	644,596	641,131
" Port Elizabeth	712,687	755,302	8,555,325	7,643,239
" East London... ..	312,060	306,373	3,768,235	3,673,278
" Durban	856,257	993,982	10,277,412	10,148,031
" Delagoa Bay	413,449	440,405	5,060,367	5,831,222
" Mossel Bay	29,575	33,567	478,270	427,230
" Port Nolloth	44	14,306	48,168	54,485
" Simonstown	708	416	5,471	3,568
" Knysna	1,233	1,745	26,609	18,432
" St. John's ... ..	...	...	4	...
" Other Ports	475	466	4,458	3,218
From S. and N.W. Rhodesia:				
South African Produce	3,029	2,133	56,582	41,614
Not South African Produce	1,871	1,430	15,275	15,668
Total Merchandise	2,911,265	3,075,713	34,945,447	34,007,178
Articles for S. African Governments	229,336	250,796	1,979,937	2,720,189
Specie	79,272	50,965	1,110,111	2,213,327
Grand Total: Imports	3,219,873	3,377,474	38,035,495	38,940,694
EXPORTS.				
SOUTH AFRICAN PRODUCE:				
<i>Via</i> Capetown	£592,935	£521,255	£8,281,907	£8,479,346
" Gold, Raw	2,750,800	2,443,933	33,909,486	30,813,987
" Other S.A.P.	122,581	86,300	1,387,849	1,173,403
" Port Elizabeth	391,738	231,551	3,447,278	3,319,740
" East London... ..	309,873	312,240	1,693,991	1,884,652
" Durban	123,890	40,800	1,064,858	979,384
" Gold, Raw	391,575	377,839	3,088,755	3,169,079
" Other S.A.P.	35,247	8,607	359,072	417,067
" Delagoa Bay	71,755	93,751	1,086,423	1,190,304
" Mossel Bay	76,235	...	481,099	330,268
" Port Nolloth ... ..	...	...	15	...
" Simonstown ... ..	...	...	4,084	4,217
" Knysna	1,285	1,507	...	...
" St. John's ... ..	...	...	...	...
" Other Ports	1,436	206	12,446	1,992
To S. and N.W. Rhodesia	48,560	37,734	482,090	464,935
Total: South African Produce	4,917,910	4,205,723	55,389,353	52,228,374
IMPORTED GOODS RE-EXPORTED:				
Through Parcel Post	6,921	8,192	54,264	57,882
In Bond and ... ..	...	...	...	...
Duty Paid	100,614	79,872	994,206	879,347
Oversea	25,190	20,679	586,087	443,737
Specie	5,689	2,162	284,214	329,772
Grand Total: Exports	5,083,324	4,325,628	57,308,214	53,939,112

JOHANNESBURG, "THE GOLDEN CITY."

THE old galvanised iron shanties used in the very early days as the offices of budding gold-mining magnates of Johannesburg are not yet completely forgotten. The old pioneer of about twenty-four or twenty-five years ago can remember such grimy but busy "cabins," in which the foundations of large fortunes were often laid. Those who recollect 1886 and 1887, when the ox-cart toiled through the mud of what is now Commissioner Street, also the flimsy structures of canvas and boards that did duty for houses, and the treeless trails called streets, marvel at the magic change which has taken place since Ferreira Town, with its little collection of canvas tents, one of which was used as the Mining Commissioners' office, was started. The goldfields were then a wilderness; but even here it was that, from such an insignificant beginning, Johannesburg evolved itself. The Standard Bank was perhaps the most pretentious building, and this was a miserable-looking little wattle-and-daub structure. Gazing at the present handsome and palatial bank building at the corner of Commissioner and Harrison Streets, one feels almost overwhelmed with amazement at the contrast between the old order and the new. The Standard Bank is truly a wonderful institution, for it has led South Africa through many tight places. It has been the great deposit as well as the great discount bank, and has given a thorough business training to thousands of Colonists, both Dutch and British. It is most wonderful, therefore, to record that it started its business in Johannesburg in the tiny and grimy-looking building in Ferreira Town, just referred to.

In 1886.

A year of two after the founding of Johannesburg, in 1886, it began to draw to it capital, labour, and intelligence. Unlike the feverish fury, however, to make wealth rapidly, the building of the town proceeded steadily. Mr. H. W. Struben had found gold, and the prospectors thus attracted to the district soon made the Rand the cynosure of every eye, and prospectors came from all parts of the world to the new Eldorado. In a little more than a year there was a population of above three thousand to be housed. It was then that one could see the wattle-and-daub shanties spring up like mushrooms, and the formerly lonely veldt teeming with human activity. Johannesburg had become the focus of an ever-increasing stream of humanity.

Three Building Periods.

There were three building periods in Johannesburg. First, the corrugated iron stage; secondly, the more pretentious brick erections; and, thirdly, the clearing out of these to make room for the magnificent structures now existent. Before dealing with these separately, it is of historic interest to mention that the first sale of stands held in 1886 was fairly well attended, and that the amount realised was £19,000. The portion sold was that now known as Central Johannesburg, and it will astonish people nowadays to know that stands in the vicinity of the Old Exchange, Commissioner Street, fetched only £300 to £400, the latter price being paid for a corner site. Away from this centre, however, the prices dropped considerably; but it must be remembered that standholders had to pay ten shillings a month stand licence, and after a few months many stands were abandoned from this cause. It was on some of these stands that the great business structures in the centre of Johannesburg were in after years to be erected, and for which afterwards £30,000 and £40,000 were paid, but which in early times could have been bought for a mere song. So wonderful has been the magical change in the development of the Golden City that it has grown up like a creation of Aladdin's lamp!

Iron Shanties.

The second sale of stands was held in January, 1887, and was more successful than the first, bringing £26,000 into the coffers of the Dutch Republic. These included some stands that had not been sold at the former sale, and also a few residential stands on the Hospital Hill. At this date the appearance of Johannesburg was that of a number of straggling galvanised iron shanties. What are now properly-defined streets, all finely paved and macadamised, were then trackless patches of sand, with huge boulders interspersed, so that it was difficult for the pedestrian to move about, especially at night. To the north there were a few mud-brick houses; Hospital Hill retained its pristine ruggedness; while to the south two or three small and insignificant wooden head-gears were the precursors of the mighty modern steel head-gears of to-day. There were no dump heaps, and there was absolutely none of that complicated present-day mine equipment; in fact, from where the Kimberley Road enters the town at Ferreira to Booyesen's Hotel was nothing but virgin veldt.

Progress of Building.

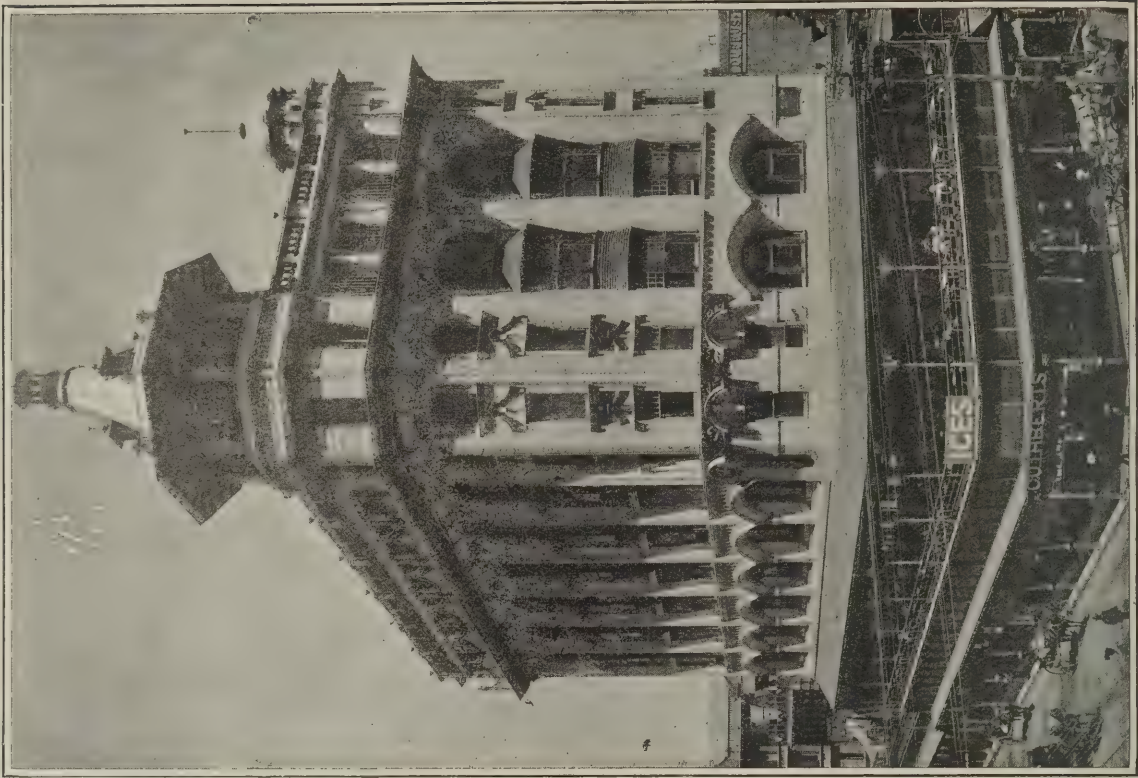
None of the suburbs had been thought of, and it was a memorable event when Julius Jeppe erected a hut—"Rose Cottage"—with a thatched roof on Natal Spruit. But within eighteen months after the date of the first sale of stands Johannesburg began to assume the definite appearance of a town. The gaps between the houses had rapidly filled, and though there was nothing in the shape of a building that could be said by the wildest stretch of imagination to boast of any architectural beauty, some, at least, were substantial. This was the beginning of the first building period referred to. The first corrugated-iron erections comprised shops, canteens, shanties, stores, and offices of different kinds for the business of the mushroom "dorp." An old Transvaaler afterwards erected a brick hotel. This was at the east end of Ferreira Camp, where the road turned down to Booyesen's. From this he quickly retired in favour of Bussey, who later built the "Central" in Commissioner Street.

A New Era.

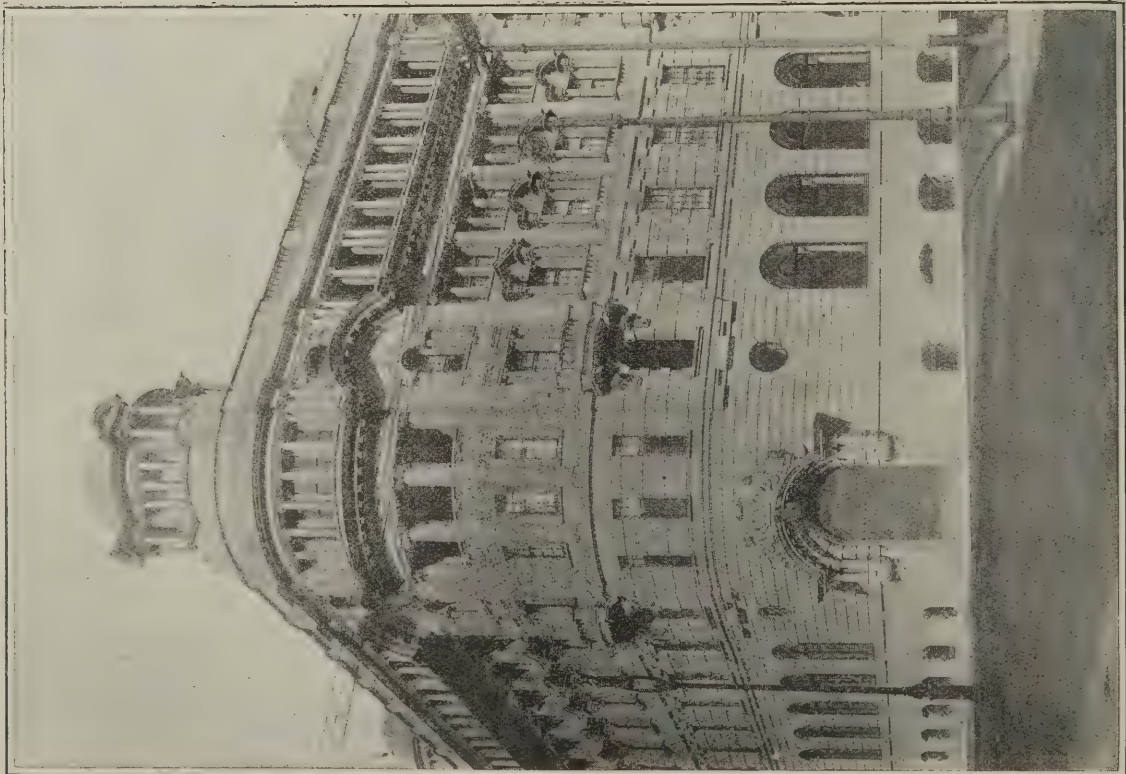
It was now the dawn of a new era. Gold was being found everywhere, and people still continued to flock to the Rand in their thousands. Farms were proclaimed as public diggings, and claims were pegged out till the country looked like the back of a hedgehog. It was then that Johannesburg became firmly established and the building boom began in real earnest. The big commercial houses of Natal and the Cape Colony had all sent their representatives to spy out the prospects of the gold industry of the Witwatersrand, and their reports were glowing and altogether satisfactory. The primitive tin shanties now began to give way to more substantial brick buildings, which led to what has been described as the "two-storey brick stage." Commissioner Street and the Market Square began to take shape. A post office was designed, which also served the purpose of a High Court. The design was a replica of those to be found in many of the smaller villages to-day, and was ornamented by a number of useless gables out of proportion to the rest of the building. After a few years this was found to be too small, and was replaced by the present building, erected by Mr. C. A. Meischke. Within the last few years the second building proved inadequate to cope with the immense volume of business, and another storey was erected at a cost of £20,000.

Old and New Exchange.

Satisfied with the now assured prosperity of Johannesburg, a large number of architects and contractors were



CUTHBERT'S BUILDINGS, JOHANNESBURG.



STANDARD BANK BUILDINGS, JOHANNESBURG.

attracted to the city. Many different styles of architecture began to multiply, until there was no uniformity in the class of building in any street. The old Exchange, built at a cost of over £100,000 at "the Chains," long remained the chief architectural glory of the town. The architect was Mr. Lennox Canning, who died in the early 'nineties. His partner was Mr. Goad, who was exceedingly popular. Many stories could be told of the fortunes made and lost in this old building. The form of "entertainment" within its walls was a striking contrast to that of the modern bioscope, to which it is now devoted. With the rapid growth and expansion of Johannesburg a new Exchange was, of course, essential, and this was erected in Marshall Square, where it stands as a grand monument to the commercial activity of the Johannesburg stockbrokers of the past and present. The new Stock Exchange cost £160,000, and well has the outlay been repaid. It is but barely nine years since the excavations for it were begun. Lord Milner laid the foundation-stone on April 6th, 1903, and the great financial nucleus was fully occupied by the end of the year. The Exchange embodies a great central hall, the heart of considerably more than 200 offices; and the appanages include a members' strong room, as well as spacious apartments devoted to reading, writing, and billiards. The present membership approaches 500, and the 200 odd stocks quoted on the official list represent a total of well over £100,000,000 sterling.

Rand Club Transformation.

The forerunner of the present lordly Rand Club was once one of the important institutions of the early days; it was a very modest structure, being merely a single storey galvanised-iron tenement, with a 6 ft. verandah. The Rand Club is a striking example of the great progress of the city, being now the possessor and occupier of £120,000 worth of regal premises, containing amongst many other comfortable advantages a grand dining-room, and a library of some 5,000 or 6,000 volumes. The membership is more than 1,500.

Magnificent Buildings.

It is impossible here to describe all the magnificent buildings in Johannesburg that have superseded those of the early days, but it may be confidently claimed that no feature of the history of Johannesburg is more fascinating than the transformation of values which has taken place in the ground whereon the city stands. The ground which five-and-twenty years ago could have been bought for a few thousands to-day is valued in millions, and yields a municipal revenue from all sources of well-nigh three-quarters of a million annually.

The visitor is confronted, the moment he arrives, by the enormous buildings that contain the head offices—the controlling brain, heart, and lungs—of the Central South African Railways. The great Central South African Railway block supplies the "motif" of the picture of substantial well-being that greets the eye in all directions—the strength and confidence of a virile manhood. The old horse-trams that followed the bullock wagons of the early days have now given place to handsome and swiftly running electric cars; the main thoroughfares, once but veldt-tracks, are to-day thronged with a busy people, and resplendent with handsome buildings and richly stocked shops, and the ever-extending landscape is adorned by the prosperous-looking suburban residences that betoken so well the fact that success is well founded and permanent.

Millions Expended.

During the last few years the many fine erections that now mark Commissioner Street, Pritchard Street, President Street, Rissik Street, Eloff Street, and other great thoroughfares, have set a hallmark upon the city to testify to its genuine worth and avow its immense value, for since the war many millions of pounds have been expended on new and permanent buildings.

Transport of Material.

Building to-day on the Rand is attended with hardly any of the many difficulties of the early times, when building contracts were not the cut-and-dried affairs that they are now, and contractors were faced with all kinds of sudden and unexpected obstacles. The railway termini were at Kimberley and Ladysmith, and the rates for the carriage of goods during the dry season proved prohibitive for building material. Merchants used to rush through as much work as possible during the summer months, but lack of transport prevented them from getting up sufficient goods to last them through the dry season, and, as a result, many buildings remained unfinished for lack of some essential detail for which the harassed builder had ransacked the town in vain from end to end. The fluctuations in prices were also remarkable, and the contractor used to make up his tender with one eye on the price-list and the other on the barometer, for an early fall of rain brought transport rates down with a run, while a drought had naturally an inflating tendency. Building material transported from Ladysmith in Natal to the Rand by ox-wagon cost no less than £26 per ton!

Nowadays there is an excellent system of railways, and these are being extended in different directions. The former difficulties of the contractor in getting his material from the coastal towns do not now exist, and huge steel-work structures are now being built, chiefly in the centre of the town. One of the first of these was the great Corner House, Eckstein's headquarters, a notable landmark, with its majestic ten storeys and relatively great proportions. The Standard Bank, already referred to, the handsome National Bank offices, the Bank of Africa, the Natal Bank, Barnato Brothers' great edifice, Exploration Buildings—these are all premises significant of progress and stability. Eastwards we find what is acknowledged to be the finest hotel in South Africa, the Carlton, which cost half a million, and is fitted up to match its value. Eloff Street and Pritchard Street form the Regent Street and Oxford Street of Johannesburg, and their splendid shops compare well with many in "Modern Babylon."

The Skyscraper.

The tin-and-wood shanty is rapidly dying out, though there still remain a few here and there to accentuate by their presence the greatness of the present-day skyscraper. On one side of Market Square, the Post Office, although heightened a few years ago by another storey, has still inadequate accommodation for its immense volume of business, so typical of the strenuous life of the Rand. The Telegraph Department alone works an enormous service daily, both inwards and outwards, and the great cablegraphic service to London and other places overseas totals up to a value of many thousands of pounds weekly. The Market Street side of the square has been aptly described as resembling a bit of Chicago, with its serried ranks of skyscrapers dominated by the towering bulk of the Corner House behind.

Social Life.

The social life of the city, as apart from the domestic element, is exemplified by several high-class clubs—the Rand, the New, the Athenæum Club, the Johannesburg, and others, all of which are luxuriously fitted up. The New Club, a commercial institution, well fitted up for its purpose, comprises more than 1,200 members. The Athenæum is housed in an elegant building in the Dutch style, and is situated rather outside the business rough-and-tumble of the town, and, as it appeals to ladies more than do the other clubs, its functions are correspondingly more social.

Chambers and Flats.

One great feature in the Johannesburg of to-day is the number of huge buildings with shops and offices on the lower floors and chambers and flats above; for example, Hatfield House and Moseley House, in President Street; Castle Block, Water Block, St. James's Mansions, Pollock



HENDERSON'S BUILDINGS, JOHANNESBURG.

Buildings, Adderley House, and others, in Eloff Street; Marlborough House, Corporation Buildings, Sacke's Buildings, and so on, in the Commissioner Street area; Park Gate Mansions, overlooking Joubert Park; Central City Buildings, the Cuthbert Buildings, in Pritchard Street, and many other similar blocks, such as Henderson's, Estcourt, Standard, and Glencairn Buildings. Most of these buildings are fitted with electric light and lifts; several have hot-water service laid on, and they have become a permanent feature of life in Johannesburg.

New Law Courts and Town Hall.

Special reference must be made to the new and imposing Law Courts in Von Brandis Square, superseding the old and hitherto inadequate buildings. This dignified pile is well worthy of the purpose it is serving. Externally the building, which cost £135,000, is very handsome, its elevations being designed as an adaptation of the Italian Renaissance. The style, however, is restrained, avoiding over-ornateness. The designers of the New Rand Law Courts (the Transvaal Public Works Department) have seen to it that there shall be nothing wanting to meet the convenience and enhance the comfort of judges, counsel, solicitors, jurors, witnesses, and all concerned. The main entrance will face Pritchard Street, and has a frontage of 349 ft. Near to this is the fine building erected on Von Brandis Square some three and a half years ago to supersede the old telephone tower, and containing the ganglion of a sound-trans-

mitting system that is claimed to be equal to any in the world. New Municipal Offices are being built on the Market Square, and the old "Tin Temples," as the former ones are called, will soon be but a memory of a great corrugated iron shanty whence emanated, through the "City Fathers," many wise and weighty schemes of civic government and control.

Rand Distributing Centre.

The general tendency of the commercial men of Johannesburg at the present time is to improve and extend their stores, thus proving that they share in the general confidence which is felt in the future of the town. This activity on their part suggests the possibility that under the Union Johannesburg will become a large distributing centre, and that much of the work which is at present done at the coast will be undertaken in Johannesburg. The present tendency is certainly towards the establishment of a large *entrepôt* here. That this would be an economical step for the inland Colonies is obvious, when one considers the frequency with which goods have to be handled when they are, as at present, stored at the coast before being sent to the interior. Under the Union there will be no obstacle in the way of railings the goods direct from the coast to Johannesburg, and the work of distributing from this centre will be reduced 50 per cent. Under the Union, Johannesburg will really be a large commercial centre for the Transvaal, apart altogether from the significance of the presence of the mining industry and the support it gives the town.

Expanding Revenue.

Referring to the amazing growth of Johannesburg, mention may here be made of the enormous growth of the revenue of the Municipality. In 1903 the total revenue was £396,301, of which a rate of 2d. per £ produced £264,750; in 1906 it had risen to £988,535, of which a rate of 2½d. per £ yielded £504,942; and for 1909 it was £728,911, to which a rate of 2d. per £ contributed £301,127. These figures of revenue for the year ended in June, 1909, include unpaid arrears of rates, fees, and so on, of which the principal items, compared with the last two years, were: Total levied—assessment rate, 1906-1907, £425,985; 1907-1908, £340,186; 1908-1909, £301,127; sanitary fees, 1906-1907, £169,347. In 1904 the valuation roll of Johannesburg stood at £11,489,540 for buildings and £26,281,434 for land. With Government property of the value of £258,325 in buildings and £1,606,822 in land, the total valuation of land and buildings in Johannesburg amounted to £39,636,121. In the following year the rateable value was £29,772,899 land and £14,105,172 buildings, making a total of £43,878,071. On March 31 the undertakings of the Johannesburg Waterworks, Estate, and Exploration Co., Ltd., and the Vierfontein Syndicate, and the water undertakings of the Braamfontein Co., Ltd., were acquired by the Rand Water Board, and on the same date the Town Council took over the water distribution systems within the municipal area of the Johannesburg Waterworks Co., and the Braamfontein Co. The Council paid the Board £149,250 for the distribution

system of the Waterworks Co., and £7,789 for the Braamfontein distribution system, including reservoirs, mains, and meters, but not stores or pieces of land.

Remarkable Land Values.

The population of Johannesburg before the war was about 80,000 souls, exclusive of natives. Think back now to Ferreira Camp and try to realise what it has all meant to the building trade; the very thought almost takes one's breath away. The streets, which have a length of about eight-five miles, are broad and regularly laid out, stretching to the cardinal points of the compass and intersecting each other at right angles. The city has been well designed, with open central squares, around which are many important commercial buildings for which high monthly rents are paid. It is a fact that for one building £300 a month rent is now charged, the ground on which it stands having at one time gone begging for a purchaser, who, however, when the "boom" came on, paid for the site alone some £30,000. There have been many sensational deals in stands at one time or another. The site on which Messrs. Blinman, Holwil, and Islip's building is situated in Eloff Street was bought from the trustees of the English Church for £110,000, which worked out at £13,750 a stand. By far the most expensive stand sold, however, was a fifty by fifty at the corner of Pritchard and Eloff Streets, on which Messrs. Thorne, Stuttford, have their premises. This was bought from Messrs. Apsey and Co. for £40,000. Many other single stands have brought in over £30,000. One at the corner of Pritchard Street and Von Brandis Street was disposed of for £38,000.

Fortunes Made or Missed.

At this point it is interesting to note that many are the romantic stories of fortunes made and lost in the rise of land values in Johannesburg. Those who have lived through some of its land booms will never forget their experiences. In 1896, for example, the market value of sites in the centre of the town sometimes jumped from hundreds to as many thousands of pounds within a day or two. That was a time of speculative mania. Many a man forgot that there must be a limit to the inflation of prices, and bought as many stands as he could cover by mortgage and deposit, and then held on for some still more fabulous offer which never came. One case illustrates many. A man who, by steady business

in a country town, had accumulated some thirty thousand pounds, was drawn in by the contagion of speculation. Realising all he possessed, he came to Johannesburg and bought stands all over the town on the smallest deposits that sellers would accept. Three men without capital obtained the refusal of a stand in the very heart of the town, and got £1,000. On condition of his financing the purchase they allowed our hero to take a fourth interest at par.

Two days later a powerful corporation offered the syndicate £10,000 for the erf, but they scoffed at the offer. The corporation wanted to build a block of offices; well, the syndicate would do the same. So they set to work, and as with the original purchase, so was the larger scheme, the one man with money was the real foundation of the financial arrangements. Needless to say, he did not realise that the seeming wealth of his three friends consisted solely in options and refusals of sites in and about town. Bonds at 10 per cent. were passed to a leading bank, in which each member of the quartette was made individually and collectively liable for the full amount. By the end of 1897 the edifice was completed. But already the boom had passed. Rent-paying tenants were hard to obtain, and interest and current expenses ate up the syndicate's resources. Presently the three with nothing to lose disappeared, and the man from the country found himself compelled to sell off his holdings in other parts of the town, and finally, early in 1899, the bank took possession of what was left and he returned to his native town a poor man. Many such stories could be related of real-estate booms in Johannesburg and of their reaction, and no one really desires to see another cyclone of feverish speculation. What does gladden the hearts of the real-estate agents of to-day and of those who have the true interests of the town at heart, is the steady rise in the normal value of property throughout the town as a whole. The high-water mark of 1896 has never been touched again, but there is a steady movement in its direction, and Johannesburg real estate is to-day a sounder and surer investment than ever before in its history.

Johannesburg Suburbs.

With the influx of population came the demand for residential suburbs of Johannesburg. Townships soon grew up, and now on every side the "Golden City" is



THE POST OFFICE, JOHANNESBURG.

surrounded by these pleasant localities, which are dotted over with villa residences and verandah cottages, nestling among flower gardens and shrubberies. It is no exaggeration to say that the domestic architecture of the suburbs of Johannesburg compares very favourably with the best work of its kind in any of the other Colonies of the Empire.

Profiting by the unrivalled electric tram-service, which brings Belgravia, Kensington, Parktown, Hillbrow, and other suburbs in direct touch with the great business centre, Johannesburg is rapidly settling down to form a permanent home for its citizens rather than a brief abiding-place. This is specially noticeable in the older suburbs—such as Doornfontein, where the many ornate residences, surrounded by spacious and luxuriant gardens, are swelling a tidal wave of prosperity through New Doornfontein down the beautiful Bezuidenhout Valley. Jeppes, too, has caught the public taste—and small wonder, for there are many charming spots to be located in the Belgravia and Kensington extensions. Jeppes has become the domestic headquarters of an extensive middle class, many of whom own their houses, and may often be seen enjoying their well-earned leisure hours in the lovely avenue in Belgravia, or luxuriating under the shade of the great plantations in Kensington.

The most fashionable suburb of to-day, however, is Parktown, with its many fine houses embowered in trees. Beyond, in 1888, the Braamfontein Estate Co. planted the lovely forest known as Sachzenwald on a kopje. There is a delightful drive through the avenues which intersect the Sachzenwald on to Craighall, which has won its way into popular favour. In the way of scenery there is much to interest one on the estate. The hotel and grounds, which have been purchased at a good round sum, are attractively designed and prettily laid out, and from the position they occupy on top of the hill a commanding view is obtained of picturesque country. Plainly visible are the townships of Parktown North, Melville, and other well-populated suburbs. The main avenue, with its stately trees and broad way leading to Craighall Park, is another feature of interest of the estate which cannot fail to attract notice. On the west and south sides of the hotel broken stretches of water which have been caught and collected by the surrounding

hills glisten in the sunlight, Craighall being particularly fortunate in possessing an abundant supply. The lake itself is a fine sheet, where boating can be had in the most favourable circumstances.

Auckland Park is also a popular residential suburb; and to the east are Hillbrow, the Berea, and the road to Orange Grove. During recent years the value of land in this area has gone up immensely, and much building has taken place. On the south, beyond the mines, extend Booysens, Turffontein, Rossettenville, and other townships. The west has also been developed, and far-reaching schemes have been mooted for the opening up of additional townships in the Langlaagte district. Building in all these localities is going ahead still, and is likely to continue to do so, for Johannesburg is now thoroughly settled down to be recognised as a place where its people have come to stay.

Johannesburg Newspaper Buildings.

Johannesburg possesses two morning and two evening newspapers—the “Transvaal Leader,” “Rand Daily Mail,” “Star,” and “Chronicle” respectively. The “Leader” building in Harrison Street is an imposing pile, and inside it is equipped with the most modern machinery and appliances. “The Master Builders’ Journal” is one of the monthlies produced for the proprietor at the “Leader” office. Recently the Annual connected with that journal was entrusted to them, and the work completed would have done credit to any Home printers and publishers.

The “Rand Daily Mail” are at present erecting new premises, having outgrown their present accommodation in Corporation Buildings. The new structure is neatly designed, and will occupy a corner of Rissik Street, nearer to the railway station. The “Sunday Times,” one of the most popular Rand weeklies, is housed at the “Rand Daily Mail” office.

The “Star” is the leading evening paper, and occupies a large building in President Street, where it has been housed for many years.

The “Chronicle” is a new “evening” started as a penny paper. There are various other mining and social journals, and altogether Johannesburg is well provided with up-to-date journalism and literature.

DURBAN, SOUTH AFRICA'S CHIEF PORT.

ANY work dealing with the progress of South Africa during the past half-century would be decidedly incomplete if some space were not devoted to what has been described, with good grounds, as the chief port of the Union of South Africa, that is to say, Durban, or Port Natal, as it is generally denominated when shipping is referred to. For although it was in 1824 that Lieutenant Farewell, impressed by a previous visit with the apparent opportunities for the formation of a white settlement in the harbour known as Port Natal, obtained the consent of the Governor of the Cape, and formed a private trading company to carry on operations in that neighbourhood, it was not until thirty years later that the town of Durban may be said to have been fairly established, for it was in that year, 1854, that the Lieutenant-Governor of Natal proclaimed the township of Durban to be a borough. Even then, or at least until a very few years previously, the township of Durban consisted of little more than wooden buildings and shanties, and not very many even of these, with no drainage, and the water supply derived from roughly sunk wells. The European population in 1854 totalled 1,204 persons (including women and children), and the value of the property is shown by the fact that although the qualification for civic rights was the possession of landed property of £25 value or the payment of rent to the extent of £5 yearly, only 229 persons were entitled to a place on the first burgess roll of 1854.

Steady Progress.

But Durban, unlike the great diamond and gold-mining camps with their far more rapid progress for periods followed by years of depression, may be said to have from that time onwards made steady, if at times almost imperceptible progress, with the exception of a few years at different stages, particularly during financial trouble in the 'sixties. In 1855 the revenue of the borough was £326, to which the borough rates contributed £283; and by 1860 the revenue had increased to £2,820 for the year, which was greatly augmented in the next few succeeding years by sales of town lands, the place having begun by then to attract attention as a coming commercial centre. In 1864 the valuation of property had attained the respectable figure of £401,576 and the amount realised by the assessment rate of 1½d. per £ was £2,509 17s. Two more years and the valuation had increased by over £50,000; then followed a set-back of over £100,000 for about five years, and it was not until 1876 that the £400,000 was again topped. From then onwards is practically a record of steady progress—if, as already indicated, at times slow, none the less sure. In 1881 the valuation was within a few hundreds of the million, and the revenue had risen to £12,611 from rates alone. A revaluation of property almost doubled the amount of the valuation in the following year, the figures for 1882 being £1,862,488, although the revenue from assessment rates only increased to £15,601, owing to a rate of 1 5-8d. replacing the former rate of 2d.

STELEONITE

STAMPED STEEL CEILINGS

Combine THE PRACTICAL, WORKMANLIKE & BEAUTIFUL.



Steleonite

IS SANITARY, FREE FROM BACTERIA AND VERMIN
CHECKS THE SPREAD OF FIRE
IS NOT AFFECTED BY VIBRATION, NOR SETTLING
OF BUILDINGS

IS EASILY FIXED WITH LITTLE EXPENSE
NEVER CRACKS, NOR FALLS DOWN
REDUCES STRAIN TO JOISTS TO A MINIMUM
IS NOT SUSCEPTIBLE TO DAMAGE FROM LEAKAGE
HAS THE BEST EFFECT OF RELIEF PAPERS
IS FAR SUPERIOR TO PLASTER OR WOOD

SAVES BOTH MONEY AND TROUBLE

Write for New Issue (100 pages) Catalogue No. 18,
and Terms and Discounts.

Also for Ornamental Zinc and Copper Work.

THE BRITISH STAMPED METAL CEILING CO.,

Works : OLD FORD, LONDON, E.

Head Office : 97, QUEEN VICTORIA ST., LONDON, E.C.

EMDECA

REGISTERED.

17
GOLD
MEDALS.

ENAMELLED ZINC TILES.

**The Ideal Decoration for
BATHROOMS, KITCHENS,
HOSPITALS, LAVATORIES,
etc.**

HALF THE
COST of TILES

In use since 1885.

LARGE DISCOUNT
TO THE TRADE

**THE EMDECA METAL DECORATION CO., Ltd.,
97, Queen Victoria Street, London, E.C.**

H. H. MARTYN & Co., LTD. *Sculptors : : Carvers : : : Modellers, etc.*

Cheltenham, London, Glasgow, Manchester, and Johannesburg.



MIDLAND ADELPHI HOTEL, LIVERPOOL: THE HYPOSTYLE HALL.
R. FRANK ATKINSON, F.R.I.B.A., ARCHITECT.

Photo: "Architectural Review."

The whole of the decorative modelling and carving throughout this building was executed by H. H. MARTYN & Co., Ltd., Specialists in Carving Modelling, Plaster, Iron Work, Wood Work.



OLD LEGISLATIVE ASSEMBLY, PRETORIA.

The Valuation Doubled.

There was comparatively little change until 1891, when the valuation had risen to £2,155,050 and the assessment rate revenue to £23,693, the rate being then $2\frac{3}{4}$ d. in the £. By 1898 the valuation had more than doubled and a $2\frac{1}{2}$ d. rate was bringing in an assessment revenue of £48,634. By 1904 the valuation had once more doubled and the $2\frac{1}{2}$ d. rate (which, as in 1898, included $\frac{1}{2}$ d. water rate) yielded £96,959. In the following year the ten millions were passed and in the year after that the valuation was still another half-million more, while the assessment revenue had by 1906 increased to £109,272. This was the high-water mark, and at last valuation, in 1910, the value was set down at £9,449,260, which at the $2\frac{1}{2}$ d. rate yielded £97,628. The renewed briskness which, however, set in last year will doubtless soon carry the valuation far beyond any figures reached in the past.

Durban a Model Borough.

In what are generally described as municipal trading undertakings, or reproductive works, Durban takes a prominent position in South Africa, and, in fact, it is in connection with these, together with its enterprise in street and road construction, Ocean Beach improvements, and such like, that it is so frequently referred to as the model borough. It has undoubtedly in many instances set the lead to other municipalities, both larger and smaller. In these trading undertakings—water, tramways, electric light and power supply, markets, and telephones—the capital invested amounts to the large sum of £1,402,935, producing an income of £243,252, with an expenditure of £130,683 (excluding interest and sinking funds), and showing a trade profit of £112,569, or 8.02 per cent. on the capital. These figures are for the year ended July 31st, 1910. The total net debt of the Corporation, both for productive and unproductive works, is £2,562,243, so that the trade profit of the trading undertakings for the year would, if capitalised on a 4 per cent. basis, be sufficient to liquidate the net debt of the borough, remunerative and unremunerative, and leave the substantial surplus of £251,982.

Municipal Services.

A brief summary of the history of these trading undertakings will prove of interest in an article on the half-century's progress of the borough. Dealing first with

that very important undertaking, the water supply, we find that about fifty years ago the little township had its main source of water supply from the town pump situated in Smith Street, and although the number of public pumps and wells (they had increased to eighteen in 1877, yielding about 47,000 gallons of water per diem), as well as private wells, increased with succeeding years—particularly in the sinking of the well named Currie's Fountain, and giving a supply of some 50,000 gallons per day—it was not until 1884 that definite steps were taken in the



MAIN ENTRANCE, PRETORIA COLLEGE.

direction of the provision of waterworks on the modern system. In that year the Durban Corporation Waterworks Law was passed, authorising the Council to construct waterworks, acquire land in connection therewith, and levy a water rate not exceeding one-halfpenny in the £ on immovable property. This water supply was derived from the Umbilo River at a point about nine miles from Durban, and the works, which gave a supply of some 200,000 gallons per diem, were opened in July, 1887. At this date the total outlay on borough waterworks, including expenditure in connection with Currie's Fountain, had been over £46,000, exclusive of interest on loan. The supply rapidly led to increased demand, and additional supplies had to be obtained by pumping from the Umhlatuzan River, and eventually, in 1894, the present main source of supply, the Umlaas River, was tapped. Various extensions of the work there have been made from time to time, the higher reaches of the Umlaas River having had to be tapped, and a huge dam constructed at Camperdown, some thirty-five miles from the intake, until at the present day the total daily delivery capacity is over 10,000,000 gallons. The total capital outlay has been £610,735, but £55,179 has been written down by annual votes from revenue, etc., so that the capital outlay at July 31st, 1910, stood at £55,556. The income for the year was £54,981 and the expenditure £12,337, showing a trade profit of £42,644, or 7.67 per cent. on the capital.

Means of Transit.

Next in importance, both from the point of view of capital invested and public convenience, come the tramways. In the early '70's an omnibus service was started, running between Grey Street and the Point, the latter then, as at the present day, the shipping centre. The fare was sixpence all the way; and when one looks at the existing pictorial reminiscences of old Durban, with the heavy sand in the main thoroughfare, West Street, through a portion of which these omnibuses had to be dragged, it does not seem an exorbitant charge for the two and a half miles or so journey. In 1879 the Durban Tramways Co., Ltd., was promoted by Mr. H. R. Collins, civil engineer (now managing director and responsible editor of the "Natal Mercury"), and in 1881 the line was opened for traffic, with four double-decked cars, having canopies and closed sides, and each pro-

viding accommodation for forty persons. This tram-line ran from Russell Street to the Point, and thirty horses were employed on the service. Another tramway was started, and supplied the needs of other portions of the town, particularly the Berea, and in 1890 the two were amalgamated. In 1891 the Town Council first took up the business of tramways, with a horse-car service for the Florida Road district, which was afterwards extended to Marriott Road, making a junction with the company's Berea line. In 1899 the Corporation bought out the company, and at once commenced taking steps for the electrification of the lines, and on May 1st, 1902, the first section was opened for traffic, and early in the following year the whole system, then comprising twenty miles of single track, was electrically equipped. Since then there have been numerous additions, until now Durban is probably the best served municipality in South Africa as regards electric tramways. The revenue for 1910 was £100,665 and the trade profit £33,279, or 7.89 per cent.

Electric Light and Power Supply.

Space does not permit dealing in detail with the other important trading undertakings of the borough, but with regard to the most important of these, the electric light and power supply, it may be mentioned briefly that the capital outlay stands at £289,845 (exclusive of £94,250 written down by annual votes, etc.), the income for the year was £67,893 (excluding interest and sinking fund), the expenditure £39,123, and the trade profit £28,770, or 9.92 per cent. on capital. The electric light service is admirable in every respect, and electricity, both as an illuminant and motive power, as well as for household cookery, is steadily growing in favour. The other trading concerns of the Corporation are the markets and telephones, with more recently the baths, etc.

The Population.

The population has, of course, shown as steady an increase as the progress has been marked in other directions, and from a total of 4,636 in 1864 the figures have now swelled to 64,689, according to a census taken by the Corporation last year (the figures of the Government census just completed not being available at the time of writing). Of the 64,689, 30,030 are Europeans, 2,039 coloured (mixed and other), 16,131 Indians, and 16,489 natives.

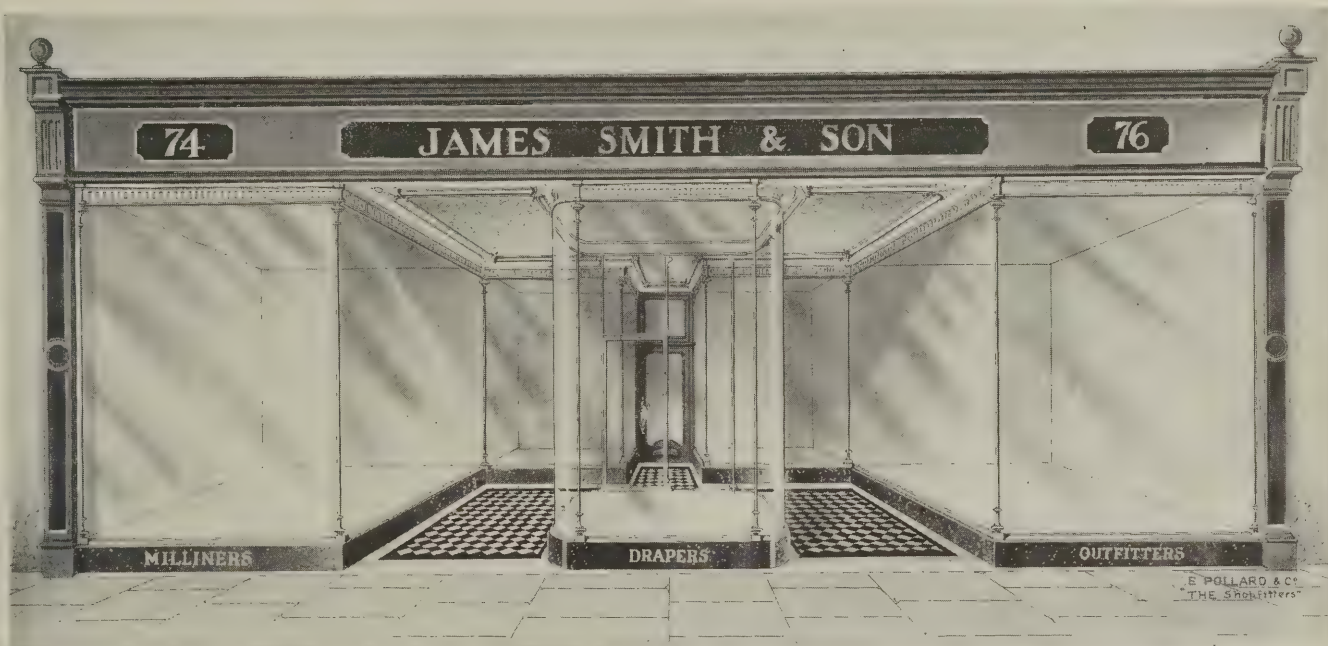


THE POST OFFICE, PRETORIA.

E. POLLARD & CO.

"THE" Shopfitters. 29, CLERKENWELL ROAD, LONDON.
Cables: "Staying, London." Codes: A.B.C. 5th.

SPECIAL SHOPFRONTS FOR EXPORT



This handsome Front in Bronze Metal, comprising 100 ft. run of window, centre "Island Window," with bent corners. All glazed with best quality plate glass. Solid Mahogany shop door, fitted with heavy Bronze metal grip handles. Mahogany and Anaglypta ceiling to lobby and ornamental tiles and marble to floor.

The base of front is of Emerald Pearl Granite, and the cost, complete, ready for fixing, is **£278.**

Plate glass fascia (best quality), with enamelled background and "Brilliant" Copper Letters, gilt with best English gold leaf, glazed complete in solid Mahogany frame, at 6s. per square foot.

Deduct £30 if bent corners to centre Island front are not required.



Bronze Metal Shopfront as drawing to fill an opening 18 ft. wide and 10 ft. 6 in. high, under fascia, with lobby 6 ft. deep. Glazed with best quality plate glass.

Solid Mahogany shop door and frame, glazed plate glass, with solid Bronze metal handles. Mahogany and Anaglypta ceiling to lobby and ornamental tiles and marble to floor. Solid Emerald Pearl Granite base, or Bronze metal stall plates as shown.

Complete, ready for fixing, for **£67.**

Deduct or add £2 5s. per foot run for larger or smaller openings. Add £7 10s. each for bent plate glass corners to entrance.

Plate glass fascia (best quality), with enamelled background and "Brilliant" Copper Letters, gilt with best English gold leaf, glazed complete in solid Mahogany frame, at 6s. per square foot.

Similar front in brass without ventilating rail and with tile case, **£1 17 0** per foot run.

Special Prices quoted to
Builders for Unglazed Metal
Shop Fronts without Joinery.

From **£15** upwards.

Write for Estimates.

RUBEROID

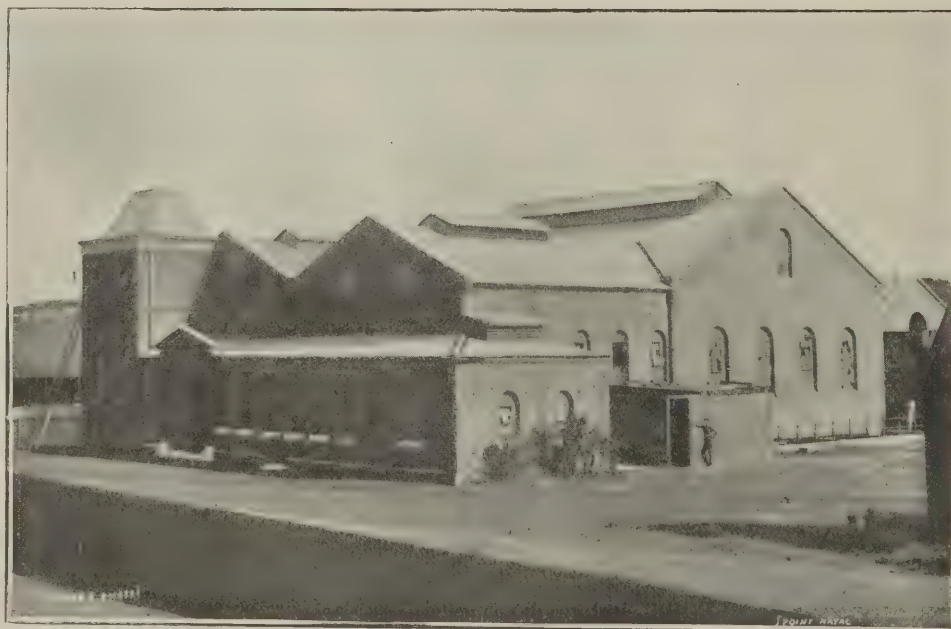
In South Africa.



Engine Sheds at Capetown Roofed with Ruberoid.

RUBEROID, the
Roofing, can be
give the same
service in all parts

PROOF AGAINST TIME,



Corporation Sewage Pumping Station, Durban. Roofed with Ruberoid.

The reliable qualities and numerous advantages of Ruberoid have been recognised by men in South Africa noted for their keen business methods.

Messrs. Lever Bros., Ltd., completely roofed their works at Congella, Durban, with some 140,000 square feet of Ruberoid. It was found so satisfactory for their purpose that they subsequently decided on its sole use for roofing their new works now being erected in Japan.

The Cape Town Corporation, after many years' experience of the use of Ruberoid, have recently specified some 30,000 square feet of Red Ruberoid for the re-roofing of the Early Morning Market Buildings, Cape Town.

We have also supplied large quantities to the Admiralty, P.W.D., South African Railways (for workshops, station buildings, car roofing, etc.), the Corporations of Johannesburg, Durban, Cape Town; Messrs. Stewart and Lloyds, Sir J. L. Hulett and Sons, Ltd., Shaw Bros., and many of the well-known Mining, Sugar, Tea, and Colliery Companies of South Africa.

The use of Ruberoid by such Authorities is an undeniable guarantee of its sterling merits.

Full particulars and Samples for Testing can be obtained from our Agents, who carry large Stocks.

DURBAN—S. Sykes and Co., Ltd.
CAPETOWN—R. B. Hendry & Co.
EAST LONDON—Dunn & Co.

JOHANNESBURG—S. Sykes & Co., Ltd.
PORT ELIZABETH—Griffiths & Co.
BULAWAYO—S. Sykes & Co., Ltd.

RUBEROID

In the United Kingdom.

World's Best
relied upon to
unequalled good
of the Globe.



Goods Station for North Eastern Railway Co., Newcastle-on-Tyne.
Concrete Flat Roof covered with Ruberoid.

WEATHER, HEAT & FUMES.

We give you a few important facts about Ruberoid Roofing—facts which have been proved by the best test of all—over twenty years' experience in all parts of the world. Study these and consider if Ruberoid is not worthy of your earnest consideration.

1. The first Ruberoid Roofs laid over twenty years ago are still giving entire satisfaction and show no signs of deterioration.

2. It is essentially a permanent Roofing suitable for the largest warehouses, factories, public buildings, etc., being weatherproof and highly fire-resisting, while its low cost and light weight make it entirely suitable for bungalows, farm-buildings, stables, etc.

3. It is the **only coloured flexible Roofing** manufactured, and is produced in three colours, Grey, Red, and Green. The colours are permanent, being an integral part of the roofing substance and do not require renewing—a deep tile Red and an old copper Green.

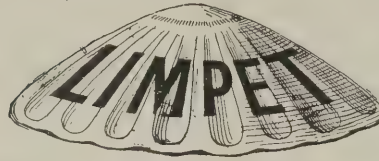


County Hall, Wakefield.
All Flat Roofs (2,000 yards) covered with Ruberoid.

Full particulars and samples for testing can be obtained from the Manufacturers,
THE RUBEROID COMPANY, Limited,
81-3, Knightrider Street, London, E.C.
And Newcastle-on-Tyne, Leith and Dublin.

REGISTERED TRADE MARK

WASHERS



& BOLTS.

SPECIFY

LIMPET FITTINGS

FOR ALL CORRUGATED IRON WORK.

EXCLUSIVELY ADOPTED BY THE INDIAN & OTHER HOME & FOREIGN GOVERNMENTS

OBSOLETE PATENTED UNIVERSAL

OLD—NEW

Features of the Limpet Fittings.

- Prevent Leakage and Corrosion
- Adjust themselves to any Curved Surface.
- Made of Steel . . .
- Heavily Galvanised.

May be had through Iron Merchants and Structural Engineers all over the World, or direct from

WILLIAM JACKS & CO.,
5, East India Avenue,
London, E.C.

Literature, Price Lists and Experimental Model, Free on Application.

Before Screw down

Airtight After Screw down

WASHER

RAILWAYS, MANUFACTURING CONCERNS & STRUCTURAL ENGINEERS ALL OVER THE WORLD

PRETORIA PAST AND PRESENT.

A Typical Boer Town.

PRETORIA is no more the "Sleepy Hollow" that it used to be called. From a tiny "dorp," with the most primitive tin and white-washed houses, it has risen to structural heights that are as marvellous as those of Johannesburg itself. It was always a typical Boer town, and was founded as far back as 1845, when the "Ooms" of the time smoked their pipes and drank coffee on the stoep. Pretoria had for years a wearisomely slow development, which it might still have been pursuing but for the discovery of the goldfields and the impetus of Johannesburg wealth, until to-day it shows all the rush and bustle of a live city. Stately buildings have taken the place of the old thatched-roof dwellings, and the streets are well paved. The new Post Office, the Railway Station, the Union Government building, and the many other public and private buildings, will all, with such fine structures as the present Government buildings and the Palace of Justice, lend a dignity to Pretoria which will make it compare favourably with any town of its own size in any other part of the world.

Much building in the future is bound to go on, for Pretoria is to be the administrative seat of the Union Government, and as such will attract a very large population. It is distant only forty-five miles by rail and thirty-four miles by road from Johannesburg, and it is no far-stretched thought or imagination that many palatial residences will be erected in the near future for well-to-do Johannesburgers and others of the wealthier class coming to this country.

Some Noteworthy Buildings.

The town possesses considerable attractions besides its serenity and healthy climate. It possesses a handsome opera house, several skating rinks, Burgher Park, the Zoological Gardens, swimming baths, the museum, and free library; and among other places of interest may be mentioned the late President Kruger's house in Church Street, where many of the "old hands" who had occasion to visit him will remember the inviting cup of coffee

always ready, and generally served to the visitor on the verandah. These were the history-making days, and in the matter of the evolution of building in Pretoria history will keep on repeating itself. Destiny will make it worthy in the way of architectural beauty of its future in the world's history as the capital of United South Africa.

Colleges and Schools.

The selection of Pretoria as the seat of Government of South Africa by the National Convention of 1908-9 marked a new period of progress in regard to municipal, and especially to Governmental, undertakings. The Transvaal Government, which had a handsome surplus in hand on the eve of the Union, decided that considerable attention should be given to Pretoria. A fine new Boys' College and Normal School had already been built, the plans for the new Post Office were enlarged, and the building now in progress will cost upwards of £130,000. In addition it was decided to provide Pretoria with the following: A University College on the eastern town lands, a Museum and Library in Market Street, and possibly a new Girls' College building later. This, with the splendid Bacteriological Institute to the north of the town, opened in 1908, represents a building programme of about half a million, to which must be added the sum of £50,000 voted by Parliament for the canalisation of that part of the Aapies River which traverses the town, and a further £100,000 just allotted for the establishment of an Agricultural College, which it has been decided shall be built at Pretoria.

The New Government Buildings.

All this is dwarfed by the erection of the new Union Government buildings, which are to cost approximately one million sterling. The scheme for the Union buildings, a long curve of white pillared façade, with a line of red roof above, overlooking the town, promises an effect as magnificent as the site, which has been chosen on the slopes of Meintjes Kop, and provides for the future subsidiary lines of buildings on the lower parts of the slope.

NATAL (MARITZBURG), ANCIENT AND MODERN.

Sixty Years' Progress.

SOME forty-six years ago a Maritzburg citizen described a journey at night along the streets of the city as a Pilgrim's Progress through mud, ruts, grass, ironstones, sluits, and darkness. Very few of the houses, or even the public buildings, boasted a second storey, and nearly all of them were built of green brick, some with plaster upon them to hide their ugliness, and others with nothing to prevent the clashing of colours which their walls and their roofs provided. It is related, too, that in the very early days of Maritzburg's history, a woman on her way home accidentally walked on to the back of an ox where Raven Street now stands, and the quadruped, feeling unwarrantably disturbed, ran off with her and left her some distance from her home.

Rudimentary Housing.

Another story, which shows the primitive conditions under which the people lived, has Governor Pine as one of its foremost characters. Whilst strolling about the vicinity of the town, which at that time was principally confined to a market square and a rudimentary church street, he was enjoying the Town Bush prospect northward, when he was startled by a man, who rushed out practically from beneath his horse's feet, and, with furious gestures, cried, "Get off my house." The excited

individual, with a big family, lived in a cave, which he had dug out for himself, and the Governor and his horse were actually standing upon his roof.

Some Early Buildings.

Some of the very oldest buildings still exist in the city, though the hand of the vandal in the shape of the native labourer has razed many an old relic to the ground during the last few years. The Voortrekkers' Church, which overlooks the Market Square, is amongst the antiquities that still remain. It has had a chequered career, for, after being relinquished for Divine Service when the new Dutch church close by it was built, it has successively been a meeting-house, a fruiterer's, a chemist's establishment, and a deserted building. Latterly endeavours have been made to revive the interest in it which its associations warrant, and, itself a relic, it is to become in its oldest days a museum for the relics of Maritzburg, and be once again put to an exalted purpose from which it has so long been a stranger.

At the other end of the Market Square, before the present fine Police Station building rose from its foundations to a belfry three storeys high, there stood a low angle-shaped building, the city's first prison and police shelter. The prisoners' cells looked out upon what is now the Court Gardens in Commercial Road, and through the iron bars many a plug of tobacco and snuff, and even

supplies of whiskey, so it is whispered, found their way to those incarcerated within.

Mixed Functions.

Some of the advertisements which were to be seen on the old low-roofed shops in Church Street were most amusing. It was evidently a set of emigrants of diverse abilities who first made Maritzburg their home. One elderly man's signboard jutted well across the primitive mud pavement, and stated that he was a bricklayer, plasterer, and general jobber, and, as an afterthought, added, "Dancing parties attended"; and in Church Street a placard was to be seen in the following incongruous terms: "Hair-cutting done and seed potatoes sold here." Maritzburg was a quaint little dorp in those days, with its low-tiled houses and grass-grown streets, but many of the oldest houses are the best built, and to this day testify to the substantial workmanship put into them. Houses may be entered to-day in which yellow wood beams and floor-boards still exist in splendid preservation, fit even now to do another quarter of a century's service. One fine old house, in which old Mr. Pistorius lived, has lately had to give way to the march of progress and be annihilated to make room for the new Government School in Berg Street.

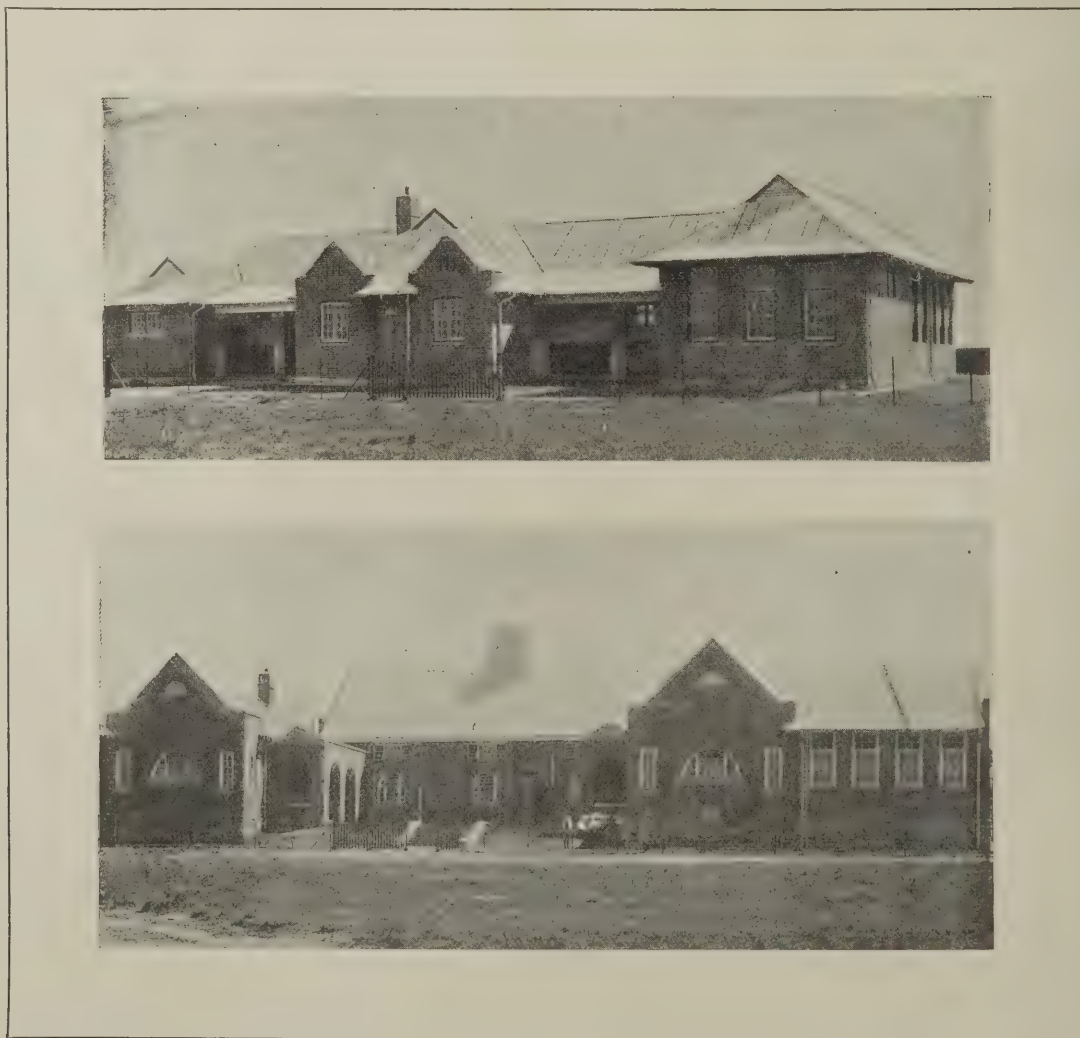
The Old Colonial Offices

were built about 1840, and in their earliest days formed the residence of a Mr. Burgess. He vacated the premises in 1845, when they were leased to the Government, and the beginning of the Natal Civil Service was instituted there. The building was enlarged from time to time. By its side a little shanty stood, built of green brick, which was the first Post Office that Maritzburg ever boasted. A man named Zietmann was the postmaster. His eye-

sight was very poor, and the oldest residents of the city can still remember the old fellow recommending them to search for their own letters and take what they wanted. Those, however, were the old days, when laxity led to no harm, and the honesty which invariably exists amongst small communities was fully in evidence in the city. About fifteen years ago the old Colonial Offices were pulled down, and the present fine structure was erected.

Church Street as It Was and as It Is.

A peep along Church Street as it was and as it is reveals the civilising influence of sixty years. No Town Hall tower raised its flagstaff high into the air as it does to-day; the streets were almost devoid of traffic, and the stores had not been modernised from the low Mediterranean style which was generally adopted. The old oil lamps lit the main street precariously at night, and the trees along the sidewalk, which are now huge sheltering oaks, may be seen in their first infancy protected from the storm and the passing bullock-waggon, with its load jutting out on either side. A glance at modernised Church Street discloses the immense strides which have been made in what is comparatively a short time in the life of a town, and the inhabitants of the city who have inherited these improvements, as well as those who have watched them grow, hope for nothing better than to secure similar advancement during the next half-century. The New University College, compared with the tumble-down shanty which was the realm of the pedagogue in the days of the old Voortrekkers, marks an advance of which the citizens of Maritzburg may well be proud, and every year sees some new architectural improvement, which in time must make the town of the present day as much an enigma to future generations as the town of 1850 is to the present inhabitants.

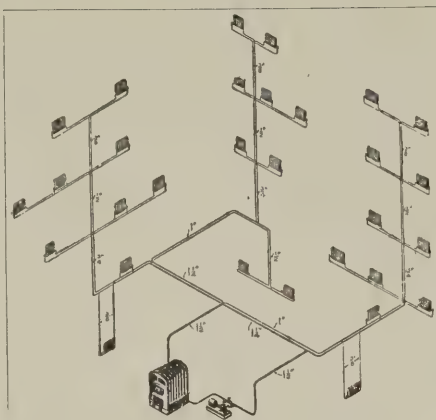


TYPES OF TRANSVAAL SCHOOLS, P. W. D. P. EAGLE, CHIEF ARCHITECT.

THE Perfect System of Heating

Specially suited for

PRIVATE HOUSES
OFFICES
SCHOOLS
CHURCHES
HOSPITALS
HOTELS
WORKSHOPS
&c., &c.

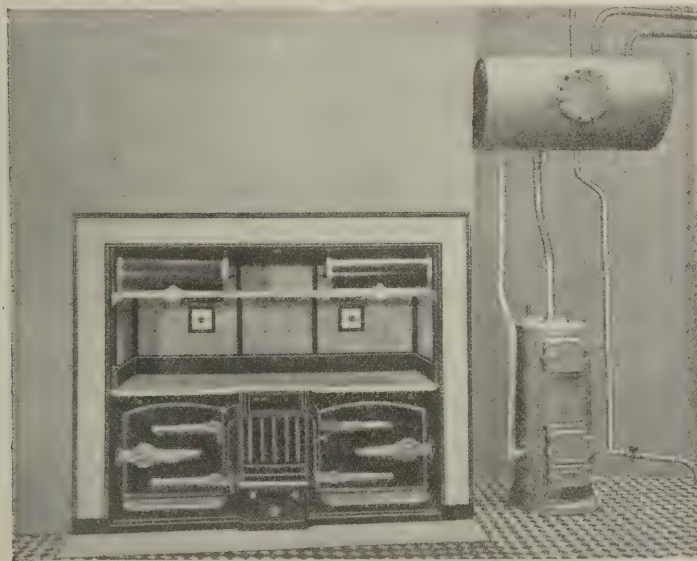


ECONOMY
SIMPLICITY
LOW COST
PERFECT ACTION
NO PIPE TRENCHES
NO TROUBLE
NO ATTENTION
BOILER FIXED ON
ANY FLOOR

MESSRS. BENHAM & SONS, Ltd., have specially designed this system to meet the MODERN and UP-TO-DATE requirements of Architects and Builders.

The system is PERFECT IN ACTION, SIMPLE IN CONSTRUCTION and LOW IN COST, and is specially suitable for buildings where cutting away and making good is an objection to the installation of a heating apparatus.

VERY SMALL SUPPLY PIPES are used and all pipes can be run quite IRRESPECTIVE OF LEVELS. The BOILER CAN BE FIXED ON ANY FLOOR.



A "WIGMORE" Kitchener with roasting fire, two ovens, tiled covings, hot closet with revolving doors and tiled surround.

On the right hand side is shown Benham's "Wigmore" Independent Boiler for hot water supply, with cylinder over.

WIGMORE KITCHENERS

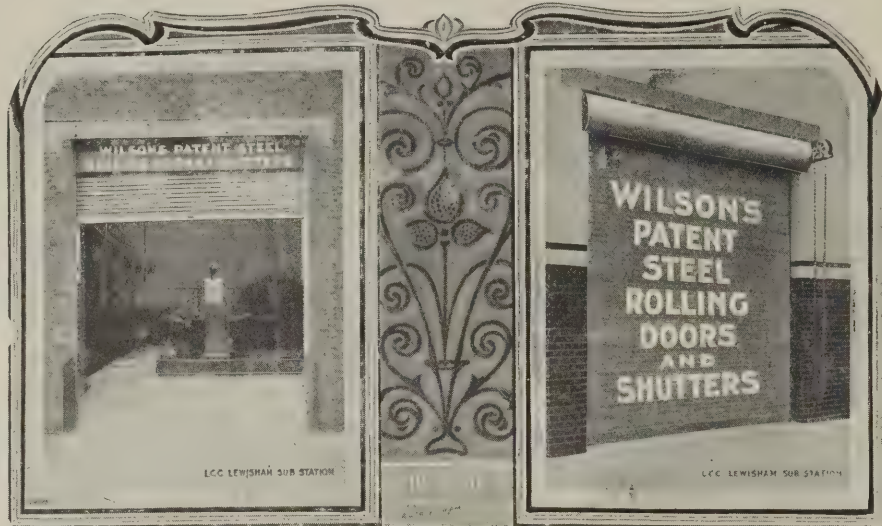
CENTRAL COAL HOT PLATES.
STEAM, COAL AND GAS
COOKING APPARATUS
FOR
PRIVATE HOUSES, HOTELS,
CLUBS, RESTAURANTS,
HOSPITALS, etc.

HOT WATER SUPPLY
by "WIGMORE" system.

BENHAM & SONS, Ltd.,
66, WIGMORE ST., LONDON, W.

THE WILSON ROLLING SHUTTER CO., Ltd.

Head Office: ST. JOHN'S HOUSE, MINORIES, LONDON, E.



ROLLING SHUTTERS AND DOORS.

FIREPROOF DOORS.

AUTOMATIC SELF-CLOSING DOORS.

ROLLING PARTITIONS.

ELECTRICALLY OPERATED GANG DOORS.

CORE OVEN DOORS.

ELEVATOR DOORS.

APPLY for Catalogue No. 49.



Shop Front erected in Regent Street, by

FREDK. SAGE & CO., LTD.,

Shopfitting Specialists, 58/62, Gray's Inn Road, London, W.C.

WE are Specialists in the manufacture of high-grade Shop Fronts in all Woods and Metals. We have erected most of the principal Shops and Stores in all parts of the World, including those for the following South African firms:

Messrs. Stuttford & Co.; Cleghorn, Harris & Co.; Gibberd, Bryant & Co.; Harvey, Greenacre & Co.; Cuthbert & Co.; Birch & Co.; Chudleigh Bros.; Parker, Wood & Co.; Sowden & Stoddart, &c., &c., &c.

Architects' details are carefully worked to, or designs are willingly submitted.

Estimates prepared free of cost.

NEW ILLUSTRATED BOOK SENT ON REQUEST.

CAPE TOWN AND SOUTH AFRICAN ARCHITECTURE.

IT is no exaggeration to say that the domestic architecture of South Africa in those fundamental principles which are demanded by the art to make it of any real account whatsoever is considerably in advance of any of the work in the other Colonies of the Empire. This, says a scholarly writer in the "African Architect," is due to the fact that there were certain traditional lines upon which to advance, and that however bad much of the work may be, the high level of this particular branch of architecture will always be maintained by the great number of well-designed homes which are to be found throughout the country. Everywhere, but more particularly in the younger province of the Transvaal, there is evidence that thought has brought about a result of natural beauty simply because of the fitness of design to the required conditions. There is no doubt that the limitation by which the architect was, and is still, surrounded, has had a great deal to do with this. He has kept his work simple, and under this influence ornament that has no message or suggestion, that conveys no memento of a maker's pleasure, rarely exists in the better type of houses. There is little reason that it should, for in South Africa it will ever be found difficult to create a decoration more beautiful than the play of sunlight or shadow upon white-washed or stone walls. Refinement in work does not demand it, and the designer is taught to appreciate the subtle colouring of the varying light, and to be content

with it. This lack of ornamentation is probably the greatest factor in the effect of restfulness apparent in much of the present-day work, and the realisation of this is of the highest importance in South African architecture generally.

Domestic Architecture.

The one serious æsthetic failure in domestic architecture in the country is the almost universal use of corrugated iron for roofing purposes. Time, however, will rectify this, and already tile factories are established at important centres where really good roofing material is being manufactured.

There are, however, many possible improvements in South African work. A real obstacle to an advance towards the more simple and suitable method of building is the ignorance of that section of the building public which demands the cheap and the showy, and, further, the want of traditional training amongst builders and workmen. When the country's architecture rids itself of such vices as plaster work jointed to imitate stone and half-timber work painted on buildings innocent of framing; when it learns to protest against following out in one material a style that had its birth in another; when South African architects realise that the climate of the country with its constant sunshine and clear atmosphere renders particularly unsuitable any attempt to reproduce in its entirety the English type of domestic buildings, then only will they attain that perfection in their work which will



GROOTE SCHUUR, RONDEBOSCH, CAPE TOWN: VIEW FROM GROUND ABOVE HOUSE.
HERBERT BAKER, F.R.I.B.A., ARCHITECT.



THE RHODES MEMORIAL, CAPE TOWN. BAKER AND MASEY, ARCHITECTS.
STATUE OF "PHYSICAL ENERGY" BY G. F. WATTS.

make it a living art representative of the country's best and noblest traditions.

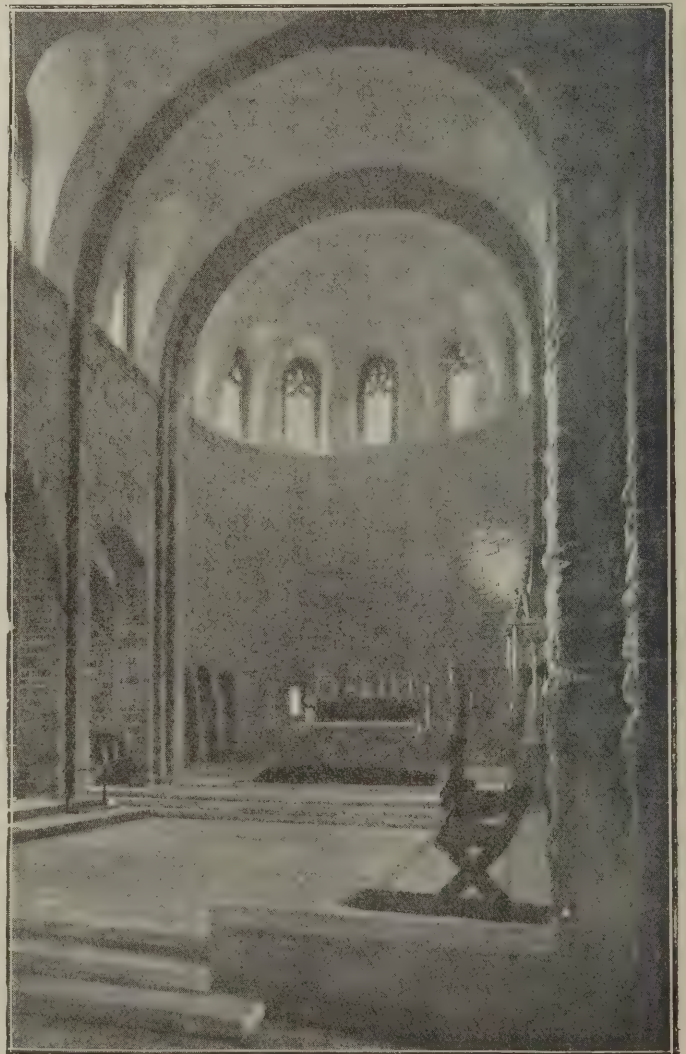
Ecclesiastical Buildings.

To this branch of the mistress art South Africa can scarcely claim to make any original contribution, nor can it be said that the work reaches anything like the same high level as domestic architecture. The early colonists have left a few simple but beautiful examples of their places of worship, but it is regrettable to admit that the very simplicity of these in design and material lead those who lack the necessary culture and appreciation to underestimate their real artistic and archaeological value and interest. When it is remembered that they are the edifices erected in a period with which almost every Dutch family is proud to be associated, it is difficult to understand how tradition has been so utterly discarded for the monuments of ugliness which are yearly raised by the Dutch people for the purpose of worship.

The same criticism must be made about the buildings of the Anglican Church. These are generally designed in a debased Gothic style, as exotic to their environment as was the Gothic work introduced into Italy at the end of the fourteenth century. It is sometimes argued that the reason for this is the endeavour to retain the links and traditions of the great Gothic cathedrals of England. With this view the sincere builder can have no sympathy. The style demands treatment in stone, which as a rule cannot be afforded where accommodation is required beyond the sum allotted for expenditure. The result is that in most cases the work is done in cement with sham joints, and ends in a ghastly failure. Those who have studied the question carefully realise that "the land cries out for domes, big detached and far seen against the clear blue sky." If South African ecclesiastical architecture is ever to be of any consequence, it must develop upon different lines from those which it has hitherto followed. Let her architects remember how conspicuously the Roman failed when he treated architecture as an art which had little or nothing to do with building, and merely attempted to copy the Greek skill and taste, forgetting that it was the outcome of a real construction. The basis for their work will be found rather in the Byzantine style, with the long ranges of columns of the basilica and the Eastern dome and something of the Arabian art to be found in the more southern portion of Italy. All the material is at hand to fully develop the style, and for their interior decoration many coloured marbles, too small in size for most purposes, are being quarried locally which provide excellently for the use of *opus Alexandrium*.

National Monuments.

A young country just developing into manhood cannot be expected to possess any considerable works of art or historical monuments. These are the products only of a nation with generations of civilisation behind it;



PRETORIA CATHEDRAL INTERIOR.

:: MACHINE :: WOODWORKER

Sawmiller, Box and Case Maker, and
Estate Sawmill Manager

28 pages Monthly - One Penny
Annual Subscription - - - 2/-
post free to any part of the World

THIS publication is a marvellous pennyworth.
It has all the best technical writers.

It deals with all matters and problems
identified with woodworking machinery, plant,
and appliances.

There is nothing else like it.

It appeals to all Woodworking trades at
home and in the Colonies.

Besides articles upon the operating of wood-
working machinery, and the management of
saws, etc., it contains Lessons on Handrailing,
Machinery and plant for Cabinet and Furniture
making, numerous Questions and Answers, etc.

ALFRED HAWORTH & CO., LTD.
Publishers, 84, Leadenhall St., London, E.C.

MASTER BUILDER & Associations Journal & Architectural Draughtsman

Subscription, 5/- per year for large
monthly issue only, to South Africa

Every Wednesday. 12 pages
Weekly (1d.) :: 80 pages
:: Monthly issue (2d.) ::

Contents of Monthly issue are entirely
distinct from those of the Weekly Issues

Principal Monthly Contents:

A LADY Architect's illustrated Articles on Domestic
Architecture and House Construction.

Special Articles by Architects and Surveyors on practical
subjects; all illustrated.

Modern Designs of a House, Villa, or Shop; each month;
elevation and plans given.

Market Reports on Slate Trade and Brick Trade.

Machinery and Plant Notes; illustrated.

Questions and Answers; illustrated.

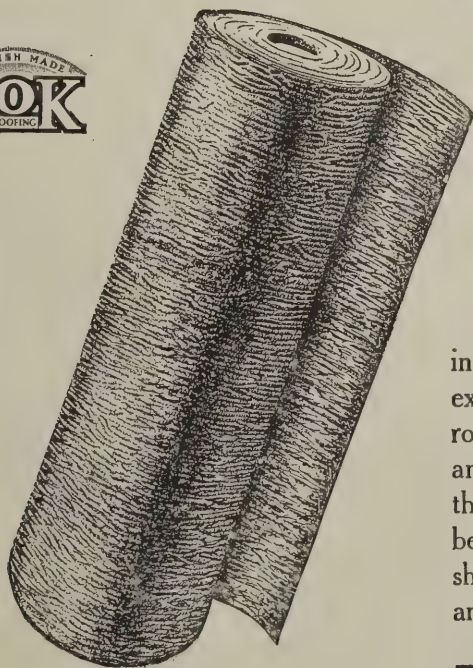
Town Planning and Housing Progress Reports.

Association News and Reports.

Articles and Notes on General Building Trade subjects.

ALFRED HAWORTH & CO., LTD.
Publishers, 84, Leadenhall St., London, E.C.

WE MAKE



in our own works at Belfast, and with our wide
experience in the manufacture of all kinds of
roofing material we now offer ROK to builders
and contractors with absolute confidence, knowing
that there is no roofing material in the world
better suited for such work as factories, work-
shops, sheds, bungalows. ROK is permanent
and will give absolute satisfaction—always.

D. ANDERSON & SON, LTD.

SAMPLES OF ROK ROOFING, Series D,
will be sent FREE on application.

WORKS { Lagan Felt Works, Belfast.
Roach Road Works, Old Ford, London, E.

PRACTICAL BOOKS FOR PRACTICAL MEN.

Acoustics of Buildings (Smith)	1s. 6d.
Art of Building (Dobson and Allen)	2s. 0d.
Brass Founding (Graham)	2s. 0d.
Brickcutting and Setting (Hammond)	1s. 6d.
Bricks and Tiles (Dobson and Searle)	3s. 0d.
Builders' Price Book, 1912	4s. 0d.
Building Construction (Allen)	7s. 11d.
Building Superintendence (Nichols)	6s. 0d.
Cabinet Making (Bitmead)	2s. 6d.
Carpentry and Joinery (with plates)	9s. 6d.
Coachbuilding (Burgess)	2s. 6d.
Drawing for Builders (Pyne)	7s. 6d.
Dwelling Houses (Brooks)	2s. 6d.
Electricity in Factories (Haslam)	7s. 11d.
Elementary Decoration (Facey)	2s. 0d.
Elements of Electrical Engineering	5s. 5d.
Forestry (Curtis)	3s. 10d.
Gas and Oil Engine Management (Bale)	3s. 9d.
Grammar of Colouring (Davidson)	3s. 0d.
Granites (Harris)	2s. 6d.
House Owner's Estimator (Simon)	3s. 9d.
House Planning (Samson)	3s. 10d.
House Property (Tarbuck)	5s. 0d.
Illuminating and Missal Painting	4s. 3d.
Measuring Artificers' Works (Tarn)	7s. 6d.
Mechanic's Companion (Templeton)	5s. 3d.
Mediaeval Alphabets (Delamotte)	5s. 3d.
Pattern Making (Horner)	7s. 10d.
Petrol Air-Gas (O'Connor)	1s. 9d.
Plumbing (Buchan)	3s. 6d.
Portable Steam Engine (Wansbrough)	4s. 9d.
Portland Cement for Users (Faija)	3s. 0d.
Portland Cement Manufacture (West)	13s. 0d.
Practical Upholsterer and Cutter-out (Bitmead)	2s. 0d.
Pumps and Pumping (Bale)	3s. 6d.
Quantities and Measurements (Beaton)	1s. 6d.
Rating and Assessment (Webb)	7s. 11d.
Reinforced Concrete Design Simplified	10s. 11d.
Roof Carpentry (Collings)	2s. 0d.
Shoring and its Application	1s. 6d.
Stoneworking Machinery (Bale)	9s. 0d.
Telephony (McMeen and Miller)	17s. 5d.
Timber Merchant's Companion	3s. 0d.
Ventilation of Buildings (Buchan)	3s. 6d.
Woodworker's Handbook (Hasluck)	1s. 0d.

Post Free on Receipt of Stated Prices. B (NS)

London: **CROSBY LOCKWOOD & Son,**
7, Stationers' Hall Court, E.C., and 5, Broadway, Westminster, S.W.

THE SOUTH AFRICAN MASTER BUILDERS' FEDERATION JOURNAL

(The Official Organ of the S.A.
Master Builders' Federation).

PRICE 6d. PUBLISHED MONTHLY.

THE AFRICAN ARCHITECT

(The Journal of the Institute of S.A. Architects).

PRICE 1s. PUBLISHED MONTHLY.

The only Building and Architectural papers published in South
Africa. Advertisement Rates and Specimen Copies can be
obtained at

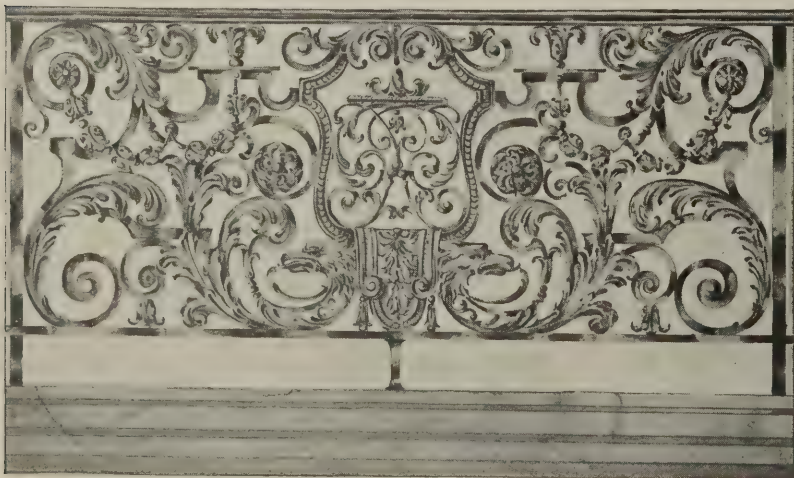
THE LONDON OFFICE, King's Chambers, Portugal Street,
Kingsway, W.C.

ARCHITECTURAL WORKS.

A 36 page Illustrated Catalogue of Publications for
Architects, Surveyors, Engineers, and Contractors.

PUBLISHED BY TECHNICAL JOURNALS, LTD., CAXTON HOUSE, WESTMINSTER, S.W.

Sent Free on receipt of a Postcard.



J. Starkie Gardner & Co.

(taken over by the Artificers' Guild)

4 CONDUIT STREET, W.

Makers of every description of
**ARCHITECTURAL IRON
AND BRONZE WORK.**

Estimates and Designs free on application.

but it is in countries which are establishing themselves, making their laws, cementing their politics, bringing their communities into order after fighting, that public spirit should be found at its highest point, and in which art should find its greatest opportunities. In a highly civilised State, where all are satisfied and there are no wars or rumours of wars, where life is easy and men are lazy and luxurious, there can be no great stimulus. South Africans are beginning to realise their obligations to those who, having laid the foundations of the nation, have passed away, and are building the monuments by which future generations may remember them.

On the slopes of Table Mountain, under the shadow of the grim peak over which the winds of all the seas pour in cataracts of cloud—on the slopes of that mountain to which he was wont to tell worried and disputing politicians to turn from “their trouble of ants” to its calm, they have erected a memorial to

The immense and brooding spirit

of Cecil Rhodes. The site is one of the finest in the world. It looks out upon the two great Atlantic and Indian oceans, and before it spread the great plains—which Rhodes wanted to see “dotted with homes”—until they reach the barrier of the Hex River Mountains, beyond which lies the mysterious north. The tranquil immobility of this great grey monument, “hewn from the granite ribs” of Table Mountain itself, promises to defy the ravages of time, and looks as though it would endure as long as the everlasting hills themselves. The design is simple, and closely follows the Greek Doric of the Sicilian temples. Flanking the great flight of steps are eight bronze lions, the last creations of the late J. M. Swan. The whole forms a magnificent setting for Watts's “Energy,” that bronze figure “mounted on a gigantic steed ready for the race, but reigning the horse in while looking into the distance at the destination which he means to reach. Forgetting the struggle it has cost him to mount to his seat and grasp the rein, he thinks only of the work that is yet to be done.” Looking with that great image across the mountains to the north, it may be felt that here, if anywhere, is a land where:

*Some work of noble note may yet be done
“Not unbecoming men that strove.”*

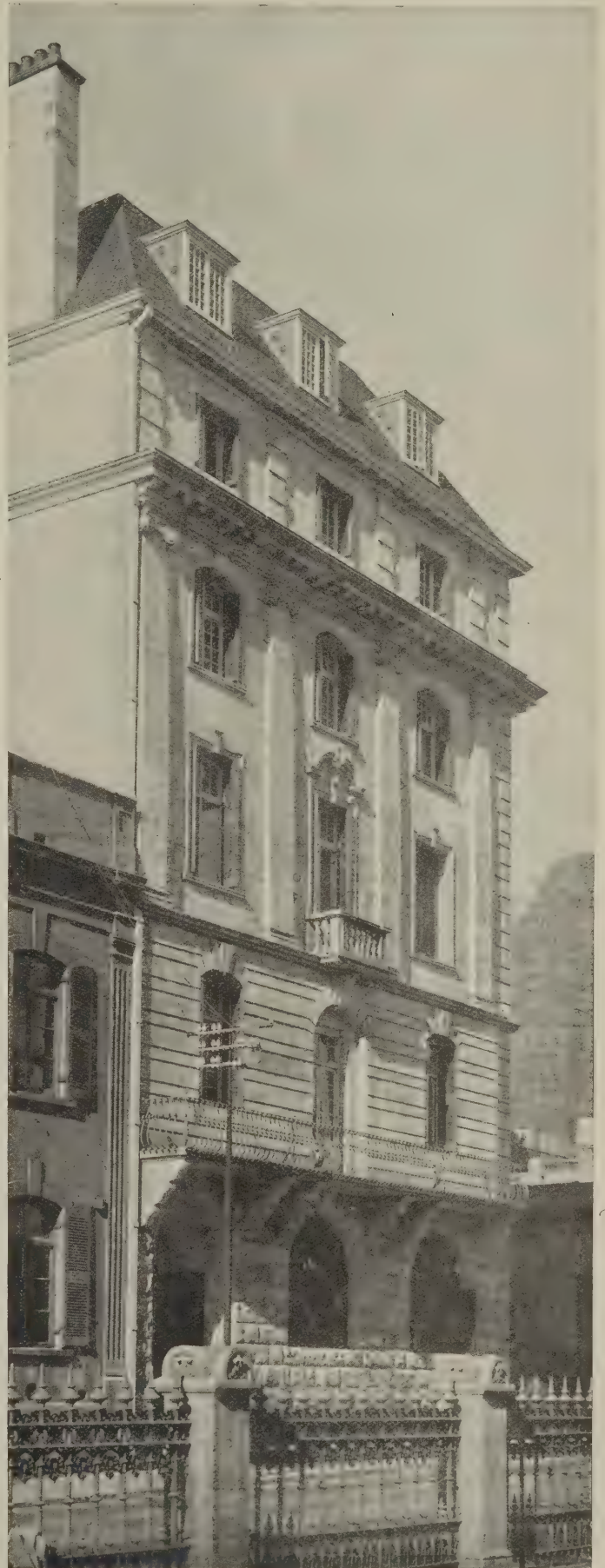
These wise words, spoken by one who had helped in the building of the new nation, aptly interpret the impression created by the entire monument. It is fitting that the man who, more than any other, strove to lay under contribution the great Greek and Roman models in his schemes for memorialising those who had served and given up their lives in the country's service should have erected to his memory just such a work as he himself often contemplated to the memory of others.

It is to his munificence that South Africa owes the two other monuments of importance in the country; the Shangani memorial on the plains of Rhodesia, with its bronze tablets by Tweed, erected in memory of Alan Wilson and his gallant band, and that other near Kimberley to commemorate the siege and those who fell there. Architecture in South Africa owes much to Cecil Rhodes, who, with the building ambitions of a Hadrian, was responsible for some of the most beautiful examples of the art which the country possesses.

Public Buildings.

No public building of a distinctive character has as yet been erected in South Africa. Of city architecture the country boasts no artistic triumph, civic buildings being almost entirely a replica of what already exists in England; but of the new and greater South Africa there is much to expect. The result of Union has been the demand for increased accommodation for public departments and the housing of the Civil Service of the country. In the northern province especially large sums are being spent by the Public Works Department in preparation for that greater part which the Transvaal is to play in the country's future. Law Courts, museums, railway stations, colleges, and schools, adequately equipped, are being built throughout the province; but the greatest achieve-

ment of the Government, and what is likely to be one of the great architectural monuments of the future, is the magnificent pile of offices for Ministers and officials which is being erected in the administrative capital. By a bold



BUSINESS PREMISES, PARLIAMENT STREET, CAPE TOWN.
BAKER AND MASEY, F.F.R.I.B.A., ARCHITECTS.

stroke of genius and originality, on the eve of union, the Transvaal Government decided to place its great centre of administration on one of the hills surrounding Pretoria. Meintjes Kop, the chosen site for the Union Buildings, is the most considerable eminence on the northern side of the town. The actual plateau on which the structure will stand is little more than half-way to the top. Here the natural shelf formation is broken by a small kloof widening out into a semicircle, which suggested the plan of the Union Buildings. On either side of this ravine will be a rectangular block of offices, connected where the ground rises above it by a semicircular colonnade, forming both a covered passage between the two blocks and connecting each to the necessary common rooms which are placed behind the colonnade. It is here that the architect of the building has displayed his genius for design. The effect of this colonnade, which is at a higher level than the main road and terrace in front of the building, and consequently necessitates a series of steps and terraces leading up to it, will be to give the building the appearance of rising with the hill and resting naturally upon it. These steps and terraces, necessary in themselves to the design, are arranged between the two office blocks and against the large semicircle in the form of an amphitheatre.

Dignified simplicity is the "note" of the building; and in the entire conception the scheme has been subordinated to a dominant idea, just as in the Acropolis it was an essential part of the policy of Pericles to keep present in the imagination of the Greek citizens a sense of the divine importance of the State.

Herbert Baker's Work.

South Africa has been fortunate in the possession of an architect who could prove himself capable of so worthy a conception. Herbert Baker, who is responsible for the Union Buildings, since he came to the country some twenty years ago, has been the most considerable influence in South African architecture. To him is due the revival of interest in the early Dutch work and the pressing into the service of the modern homes such features as could be adapted from the old Cape homesteads, thereby carrying forward the style. Throughout the length and breadth of the land are examples of his master hand, the real significance of which can only be tested by the imprint that such works as "Groote Schuur," the Rhodes building at Capetown, and his most recent masterpiece, must leave on the creations of future generations of architects.

B. T. BATSFORD'S STANDARD PUBLICATIONS FOR ARCHITECTS & BUILDERS.

CIVIC ART: Studies in Town Planning, Parks, Boulevards, and Open Spaces. By THOMAS H. MAWSON, Hon. A.R.I.B.A., Lecturer on Landscape Design, University of Liverpool. Containing upwards of 350 pages, illustrated by two Coloured Plates, and 275 Drawings and Photographs of English and Foreign Examples, finely reproduced in line, half-tone and collotype. Crown Folio, handsomely bound in buckram, gilt. Price £2 10s. net.

ENGLISH HOUSE DESIGN: Being a Selection and Brief Analysis of some of the Best Achievements in English Domestic Architecture from the 16th to the 20th Centuries, together with numerous Examples of Contemporary Design. By ERNEST WILLMOTT, F.R.I.B.A., Architect. Containing 222 pages, with 155 Illustrations of Exterior and Interior Views, chiefly full-page reproductions of choice Photographs, with numerous Plans. Royal 8vo, cloth, gilt. Price 10s. 6d. net.

MODERN COTTAGE ARCHITECTURE, illustrated from Works of well-known Architects. Selected and described by MAURICE B. ADAMS, F.R.I.B.A. Second Edition, revised and enlarged, containing 83 full-page Plates from Photographs and Drawings, and 54 Illustrations of Plans, Elevations, etc., in the text. 4to cloth, gilt. 10s. net.

MODERN SCHOOL BUILDINGS, Elementary and Secondary. A Treatise on the Planning, Arrangement, and Fitting of Day and Boarding Schools. By FELIX CLAY, B.A., Architect. Second Edition, revised and enlarged, containing 560 pages, with 450 Illustrations of Plans, Perspective Views, Constructive Details, and Fittings. Imperial 8vo, cloth, gilt. £1 5s. net.

PUBLIC LIBRARIES: Their Planning, Design, Construction, and Fittings. By A. L. CHAMPNEYS, B.A., Architect. Containing about 200 pages, with over 100 Illustrations of Modern Examples. Imperial 8vo, cloth, gilt. 12s. 6d. net.

BUNGALOWS AND COUNTRY RESIDENCES. A Series of Designs and Examples of executed Works. By R. A. BRIGGS, F.R.I.B.A. Fifth and enlarged Edition, containing 47 full page Plates of Exterior and Interior Views and Plans. Demy 4to, cloth, gilt. 12s. 6d.

GOTHIC ARCHITECTURE IN ENGLAND. An Analysis of the Origin and Development of English Church Architecture, from the Norman Conquest to the Dissolution of the Monasteries. By FRANCIS BOND, M.A., Hon. A.R.I.B.A. Containing 800 pages, with 1,254 Illustrations, comprising 785 Photographs, Sketches, and Measured Drawings, and 469 Plans, Sections, Diagrams, and Mouldings. Large 8vo, cloth. £1 11s. 6d. net.

THE ARCHITECTURE OF THE RENAISSANCE IN ITALY. By W. J. ANDERSON. Fourth edition. With 7 full-page Plates and 110 other illustrations. Large 8vo, cloth. 12s. 6d. net.

A FULL CLASSIFIED CATALOGUE (ILLUSTRATED) of MODERN BOOKS for ARCHITECTS, SURVEYORS, DECORATORS, CONTRACTORS, BUILDERS, &c., WILL BE MAILED FREE ON REQUEST.

B. T. BATSFORD, Publisher, 94, HIGH HOLBORN, LONDON.

THE ARCHITECTURE OF THE RENAISSANCE IN FRANCE. A History of the Arts of Building, Decoration, and Garden Design under Classical Influence from 1495-1830. By W. H. WARD, M.A., A.R.I.B.A. Containing 500 pages with 465 Illustrations. 2 Vols., large 8vo, cloth. 3cs. net.

BUILDING CONSTRUCTION AND DRAWING. A Text Book on the Principles and Details of Modern Construction for the Use of Students and Practical men. By C. F. MITCHELL and G. A. MITCHELL. Part I. (ELEMENTARY). 7th edition. With 1,000 Illustrations. 3s. Part II.: (ADVANCED). 5th edition. With 750 Illustrations. 6s.

REINFORCED CONCRETE: Theory and Practice. By FREDERICK RINGS, M.S.A. With a full explanation of the principles governing its use and descriptions of the chief systems of construction at present employed, also numerous Formulæ and Tables. Containing 200 pages, with 200 Illustrations, including a detached Ready Reckoner (of celluloid) for the Designing and Checking of Slabs and Beams. Crown 8vo, cloth, gilt. 7s. 6d. net.

MODERN PRACTICAL CARPENTRY. For the use of Workmen, Builders, Architects and Engineers. By GEORGE ELLIS. Containing a full description of the Methods of Constructing and Erecting Roofs, Floors, Partitions, Scaffolding, Centering, Bridges, Gates, Tunnels, Excavations, Wood and Half-timber houses, and various Structural Details. Containing 450 pages, with 1,100 practical Illustrations. Crown 4to, cloth. 12s. 6d. net.

MODERN PRACTICAL JOINERY. A Treatise on the Practice of Joiner's Work by Hand and Machine. By GEORGE ELLIS. Containing a full Description of Tools and their Uses, Workshop Practice, Fittings and Appliances, the Preparation of all kinds of House Joinery, Bank, Office, Church, Museum, and Shop Fittings, Air-tight Cases, and Shaped Work. With concise Treatises on Stair-building and Hand-railing. Third Edition, containing 380 pages, with 1,200 practical Illustrations. Crown 4to, cloth, 15s. net.

THE PRINCIPLES OF PLANNING BUILDINGS. By PERCY L. MARKS, Architect. With Notes on the Essential Features and Requirements of Different Classes of Buildings. Third Edition, revised and greatly enlarged. Illustrated by over 200 Plans of Buildings of various types, chiefly of executed works of eminent modern Architects. Large 8vo, cloth, gilt. 12s. net.

ENGLISH SHOP FRONTS, OLD AND NEW. A Series of Examples by leading Architects. Selected and specially photographed, together with Descriptive Notes and Illustrations. By HORACE DAN, M.S.A., and E. C. MORGAN WILLMOTT, A.R.I.B.A. Containing 52 full-page Collotype Plates, reproduced from Photographs, and 25 smaller Illustrations interspersed in the text. Large 8vo, art linen, gilt. 15s. net.

The Artificers' Guild,

LIMITED

4, CONDUIT STREET,
REGENT STREET, LONDON, W.



Pewter Altar Set, with Crystals.

Designed by Edward Spencer.

ARCHITECTURAL WORK,
CHURCH METAL WORK,
SILVER WORK
OF ALL DESCRIPTIONS.

Gives Satisfaction wherever used.

THE 'HEAPED' FIRE

(BRATT'S PATENT)

Scientifically constructed
to generate great heat
with economy of fuel.

PRICES from

25s. to £40



A varied and extensive range of designs.
The "Heaped" Fire is immeasurably
superior to any other type, a fact which
is emphasised by its adoption by leading
architects everywhere.

WRITE FOR ILLUSTRATED BOOKLET.

Bratt, Colbran & Co.

And the HEAPED FIRE COMPANY, LTD.,
10, Mortimer Street, London, W. (Eng.).

PETROL AIR-GAS

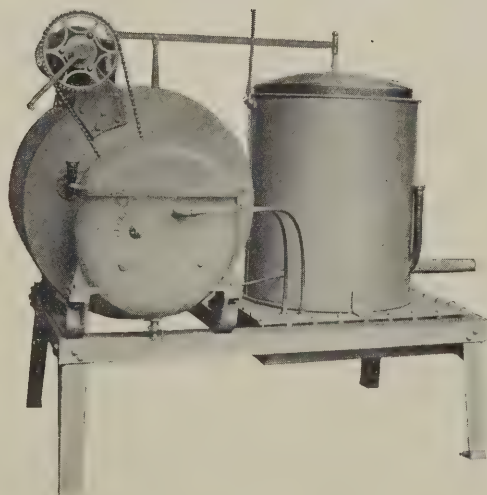
**A PERFECT MACHINE for
Colonial Lighting & Heating**

**BEST BRITISH
WORKMANSHIP
THROUGHOUT**

**Most Simple. Safe.
Very Efficient and
Most Reliable.**

Weight Driven, Water Driven,
or Engine Driven.

**An Ideal Apparatus
for
Up-Country Stations,
Bungalows, Churches,
Halls, & Buildings of
every description,**



**No Skilled Labour
required.**

Entirely automatic.

No Valves or Cranks.

No complicated mechanism.

No danger of explosion.

No condensation.

No special fittings.

**Not affected by changes
in temperature.**

Every Machine Tested
and Guaranteed.

LIBERAL TRADE TERMS.

For Catalogue and Estimates, apply to—

THE BEACON LIGHT (VALVELESS) GAS GENERATOR, LTD.,

105, Horseferry Road, Westminster, S.W.

Telegrams: "Beacelight, London."

Telephone: 2215 Victoria.

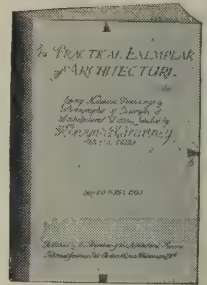
TECHNICAL JOURNALS' PUBLICATIONS

The Practical Exemplar of Architecture.

Selected by MERVYN E. MACARTNEY, B.A., F.S.A., F.R.I.B.A.

The scheme of the EXEMPLAR is to give an absolute and correct reproduction of fine details from the old and new Masterpieces of Architectural Design and Construction by means of Photographs and Measured Drawings. Each series (issued in a Portfolio) forms a unique collection of ancient and modern work, ready for immediate use and adaptation.

Series I. (1907), 120 Plates and Portfolio	...	15/-	each
Series II. (1909), 112 " 8 pp. descriptive Notes, and Portfolio	...	15/-	Nett,
Series III. (1910), 112 " " " " Annotated	...	post free	
Index, and Portfolio	12/6	(Inland).	

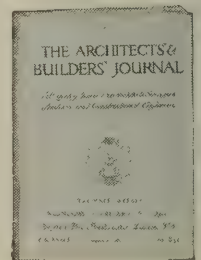


The Architects' and Builders' Journal.

"THE ARCHITECTS' AND BUILDERS' JOURNAL" is a publication which, while giving due attention to the higher aspects of Architecture, deals particularly with the more practical side of the art. Informative articles, by acknowledged experts, upon all points of construction are standing features of the Journal; and the very latest news of building trade activity is given week by week. All subscribers are entitled to the services of specially retained experts whenever confronted by a difficulty.

"DETAILS, OLD AND NEW," showing measured drawings and photographs of the elevations of noteworthy work, are a regular feature of each weekly issue. This valuable series commenced March 22, 1911.

Every Wednesday, Price 2d. Annual Post Free Subscription, 10/10; Canada, 13/-; elsewhere abroad, 19/6.



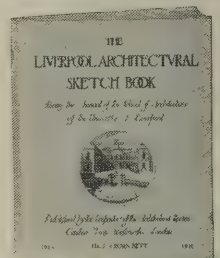
The Liverpool Architectural Sketch Book.

Being the Annual of the School of Architecture of the University of Liverpool. The Liverpool Architectural Sketch Book, comprising some 112 illustrations, affords striking evidence of the forward movement in Architectural Education. The drawings are skilfully executed, and have been fully reproduced on heavy art paper, in a handsome 4to volume.

Vol. I. 1910. Price 2/6 nett.

Vol. II. 1911. New and Enlarged Number. Price 5/- nett.

The Volumes will be sent Post Free (Inland) if remittance accompanies the order.



Recent English Domestic Architecture.

Edited by MERVYN E. MACARTNEY, B.A., F.S.A., F.R.I.B.A.

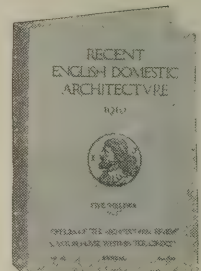
English Domestic Work is of acknowledged supremacy in the domain of Architecture. These Special Issues give a magnificent collection of the work of the best architects of the day, and are of the greatest value, not only to architects and builders, but also to those having estates to develop, and others who are interested in house-building.

1908. Vol. I. Out of print.

1909, 1910. Vols. II. and III. Price 7/6 each nett.

1911. Vol. IV. Price 5/- nett.

The Volumes will be sent Post Free (Inland) if remittance accompanies the order, otherwise postage will be charged.

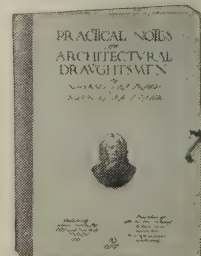


Practical Notes for Architectural Draughtsmen.

By A. W. S. CROSS, M.A., F.R.I.B.A., AND A. E. MUNBY, M.A., A.R.I.B.A.

Gives in most convenient form for use on the drawing-board examples with concise rules, explanations, and dimensions for preparing Designs, Perspectives, and Working Drawings for Classical Architecture with rapidity and precision. It contains a mass of valuable information with carefully drawn examples. How to draw "The Orders" correctly with the smallest possible amount of study and work is shown by the invaluable drawings and data given in this publication.

Price 15/- nett, Post Free (Inland), including Portfolio.

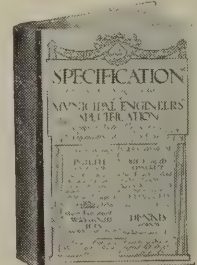


Specification :

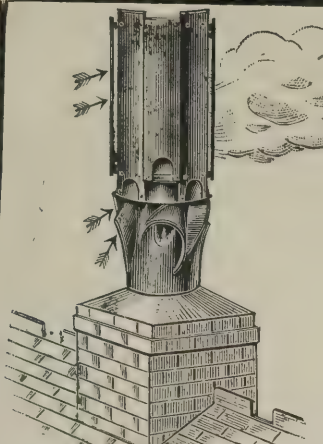
FOR ARCHITECTS, SURVEYORS, AND ENGINEERS, WHEN SPECIFYING. Among the Important Special Contributions appearing in this Volume are the following:—Cinematograph Theatres, Notes on Motor Garages, Glossary of Technical Terms, Half-Timber Construction, Methods of Illumination (Acetylene Gas, Coal Gas, Oil, Petrol Gas, etc.), Working Drawings of some Important Recent Buildings. The work is the "Standard Encyclopædia of Technical Information" on all subjects which arise when specifications are being prepared.

No. 14, 1911-12. Price 3/6 nett, postage (Inland) 6d. extra.

Over 500 pages, 13 in. by 9 in., strongly bound.



Orders should be sent to The Manager, TECHNICAL JOURNALS, Ltd.,
Caxton House, Westminster, S.W.



E. G. WRIGHT,
Chimney Expert,
GUILDFORD,
SURREY.

The Patent 20th Century
"KING" Chimney Cowl.

Contractor to H.M. Govern-
ment, the London C.C., &c.

Increase Updraught. Does
not Clog. Easily Swept.
No Working Parts.

**E. G. W. Undertakes the
Curing of Smoky Chimney.**

Clean Detail Drawings

John Hassall, R.I., writing of *The GEORGIAN* drawing pencils said: "I find they have all the necessary qualifications for black and white work, in that they rub out without leaving any sign on the whitest boards." If you have detail work to do you will realise what this means. Your finished drawings will not appear blurred because of the grey lines which you cannot erase. Make a trial with them now. All the Qualities; half the Price.

The GEORGIAN
"The Pencil with the Silken Touch"

2/- per carton of 12. Of your Dealer.

Sample Free from **W. H. SMITH & SON**
Manufacturing Stationers, Kean Street, Kingsway, W.C.

WILLCOX'S PUMPS

—Semi-Rotary—
for

House Water Supply,
House Sewage,
Council and Estate
Purposes.

They answer excellently for
drawing water from wells and
ponds, &c., and delivering up
into baths and cisterns of
houses, etc.

We have various designs,
unmounted or mounted on
stands, and stock all sizes
from $\frac{1}{2}$ in. to 4 in. connections.

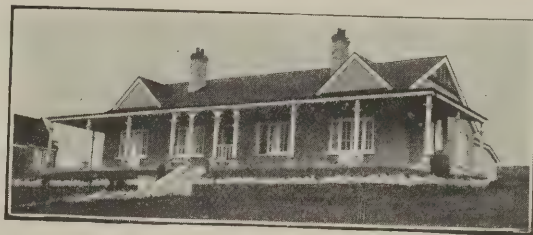
Send for Booklet.

W. H. WILLCOX & CO.,
LTD.,
23, 32/8, Southwark St.,
LONDON, S.E.



In
IRON
and
BRASS.

4,000
in Stock.



RUBEROID

Ruberoid Roof Talks. No. 5. "BUNGALOW ROOFS"

A green Ruberoid Roof for a Bungalow of this description gives an artistic effect impossible to improve upon. The rich green colour will neither fade nor wash out; being part of the material, it is as permanent as the Roofing itself. Ruberoid, moreover, is so light and easy to handle, and its flexibility enables it to be bent to the shape of any roof without trouble. Ruberoid is both rain-proof and heat-proof, and its remarkable durability has been proved in many instances where it has been used for twenty years without repair. Another great advantage in a Ruberoid Roof is that it does not require metal flashings, and is just as suitable for flat as for pitched roofs. Ruberoid is also produced in an attractive Red—rich and warm in colour, and will harmonise with any surroundings. Before you decide upon your roofing material send for the Ruberoid Book of Facts and a sample of Ruberoid Roofing. These are sent free on application to—

THE RUBEROID COMPANY, LIMITED,
1, Waterloo House, Knightrider Street, London, E.C.



ALWAYS
LOOK
FOR
THE
TRADE
MARK



BURN BROS.'

Cast Iron Gas-tight
House Drains,
& L.C.C. Soil Pipes
& Fittings.

**LARGEST STOCK IN
THE TRADE FOR INSTANT
DELIVERY.**

Endless variety of
Patterns to select
from.

ROTUNDA WORKS,
3, Blackfriars Road,
LONDON, S.E.

CONTENTS.

	PAGE		PAGE		PAGE
LEADERS:		NEWS ITEMS:		Poplar's Electricity Works Extension ... 666	
Architects, Clients, and Contractors ...	649	New Art Gallery at the Guildhall; Cannon Street Subway; Restoration of Chepstow Church; Fatal Scaffold Accident; Removal of a London Statue; Two Heating Contracts; The Old Reindeer Inn, Banbury; Another Big London Hotel; Rembrandt and Méryon Etchings; The London Society; Resignation of Sir Maurice Fitzmaurice; The Future of English Wall Painting ...	658	The Housing of the Working Classes Bill ... 666	
The Preservation of Ancient Monuments ...	651	Obituary: Mr. J. Wright Clarke ...	658	New York's New Building Code ... 666	
The Architect Poseur ...	651	In Parliament: By Our Press Gallery Representative ...	658	Complete List of Contracts Open ix., x., xii.	
Fortunes and Misfortunes in the Building Trade ...	651	Belgian Scaffolding Practice. By A. G. H. Thatcher ...	659	Tenders ... xiii., xxv.	
The Cheapening of Cottages ...	652	New Fellows and Associates of the R.I.B.A. ...	661	Electrical Notes ... xvi.	
Practical Conditions of Ornamental Design ...	652	Paris Jottings ...	662	ILLUSTRATIONS:	
Legal: Principal Contractors' and Sub-Contractors' Liability for Accident ...	654	A Mogul Marble Screen from Delhi ...	662	Drawing-room Chimney-piece, "Derry's Wood," Womersley, John F. Bentley, Son, and Marshall, Architects ...	647
A Novelty in Building Construction Plant ...	654	The Teak Trade and the "Tusker" ...	662	Mogul Screen from Delhi ...	648
Correspondence: Cross-lighting and Ventilation (George H. Widdows, A.R.I.B.A.) ...	654	The Waste of Public Water Supplies. By Wm. Whitehouse, M.S.E. ...	663	Cartoon for Stained Glass, "The Song of Songs," by Burne-Jones ...	652
Societies and Institutions: Institution of Gas Engineers ...	655	Our Plate: The New Quadrangle, Merton College, Oxford ...	664	Inlaid Lectern, by Ernest W. Gimson ...	653
The Street Name-Plate Problem ...	655	BOOK NOTICES:		Gantry for New Building of H.M. Stationery Office ...	654
Our South African Export Supplement ...	655	Farm Buildings; Municipal Engineering Problems ...	665	Name-plate by Doulton and Co., Ltd. ...	655
Proposed New Municipal Works ...	655	The Science Museum: New Building Scheme ...	665	Gable End, West Mills, Newbury ...	656, 657
Details Old and New: Bay Window, West Mills, Newbury ...	656			Belgian Scaffolding Practice ...	659, 660, 661
Competitions ...	656			New Quadrangle, Merton College, Oxford. Basil Champneys, B.A., Architect, 664, and Centre Plate.	
The Projected Australian Capital City ...	656				

The EXPANDED METAL Co., Ltd.,

Telephones: Victoria 1514, Gerrard 879. Telephones: 94 (2 lines).

Head Office: YORK MANSION, YORK STREET, WESTMINSTER, S.W.

Works: STRANTON WORKS, WEST HARTLEPOOL.

Telegrams: "Distend, London." Telegrams: "Expansion, West Hartlepool."

Patentees and Manufacturers of

EXPANDED METAL

FOR REINFORCED CONCRETE AND FIRE-RESISTING CONSTRUCTION.

REINFORCEMENTS FOR CONCRETE.

Expanded Steel Sheets and Bars for FOUNDATIONS, WALLS, FLOORS, ROOFS, BRIDGES, RESERVOIRS, SEWERS, CONDUITS, HOP-PERS, SILOS, etc.

LATHINGS for PLASTER WORK.

Expanded Metal Lathings for EXTERIOR WALLS, CEILINGS, PARTITIONS, STEELWORK-ENCASING, etc.

EXPANDED METAL SHEETS

for use in FENCING, DIVISIONS, GUARDS, VENTILATORS, LOCKERS, BASKETS, etc.

PLEASE WRITE FOR ILLUSTRATED HAND BOOK AND PRICE LIST.



THE SCOTTISH NATIONAL EXHIBITION, GLASGOW 1911—THE PALACE OF HISTORY.

Timber Framework and Cement Plaster on Expanded Metal Lathing.

Messrs. Walker & Ramsay, Glasgow, Architects.

Published by permission of Messrs. T. & R. Annan & Sons, Glasgow, Official Photographers.

PETROL AIR-GAS

AN IDEAL MACHINE

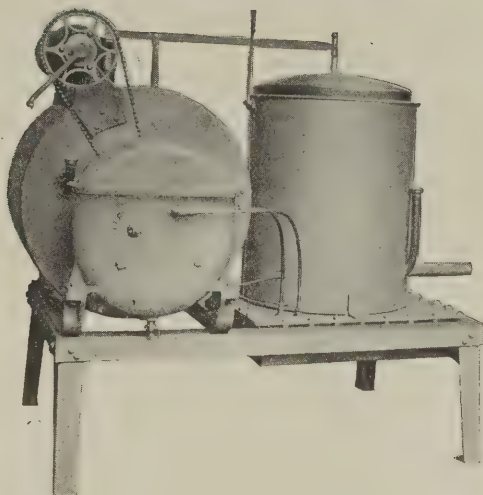
FOR
Lighting and Heating

**BEST BRITISH
WORKMANSHIP
THROUGHOUT**

Most Simple. Safe.
Very Efficient
and
Most Reliable.

Weight Driven, Water Driven,
or Engine Driven.

Every Machine
Tested and Guaranteed.



Entirely automatic.

No Valves or Cranks.

No complicated mechanism.

No danger of explosion.

No condensation.

No skilled labour required.

No special fittings.

Not affected by changes in temperature.

Liberal Trade Terms.

Inspections made in any part, and Expert Advice free.

For Catalogues and Estimates, apply to—

THE BEACON LIGHT (VALVELESS) GAS GENERATOR, LTD.,

105, Horseferry Road, Westminster. S.W.

Telegrams: "Beaclight, London."

Telephone: 2215 Victoria.

If you do not already know
our work in reproducing
—— plans ——

Forward tracing for free sample

Trade

"Velography"

Mark

Illustrated Catalogue,
Sample books of
Drawing & tracing
papers on application.

NORTON & GREGORY, L^{td},
Castle lane, Westminster
and at
34 Robertson Street,
Glasgow.

SEND FOR SAMPLES OF

Flemish Glass

A new and most attractive variety of Ornamental Window Glass, unsurpassed for character and brilliancy.

Particularly effective in the best kinds of Leaded Light Work and for glazing in casements, door panels, or interior partitions, where the object is to partially obscure the vision but not the light.

Sold in large and small patterns and in White Staining, White and numerous Tints.

MANUFACTURED ONLY BY

CHANCE BROS. & CO., Ltd.

Manufacturers of WINDOW GLASS of all descriptions, SHEET GLASS, Plain and Rough CAST PLATE, MUFFLED GLASS, FIGURED ROLLED GLASS, Rolled and Double Rolled CATHEDRAL GLASS, OLD ENGLISH CROWN GLASS and GENUINE CROWN BULLIONS and of VITREOUS TILES and MOSAIC.

GLASS WORKS near BIRMINGHAM

H. H. Martyn & Co., Ltd.,

CARVERS,

CHELTENHAM.

HIGHEST CLASS JOINERY.

Sole Concessionaires for the U.K. of the

GLOBE REVOLVING DOOR

the only real REVOLVING PANIC
DOOR on the Market—approved by
various local bodies.

Carbolineum Avenarius

REGD.

Wood Preservative
Antiseptic and
Disinfectant.

Undoubtedly the Best Wood Preservative known. Cheaper and more effective than paint.

Invaluable for the protection of Wooden Buildings, Fences, &c.
Gives a nice nut-brown colour.

Horses will not bite wood treated with it.

Has been proved a success for the last twenty-six years in this Country and is used regularly on many of the largest Estates.

C. A. PETERS, Ltd., DERBY.

116, NEWGATE STREET, LONDON, E.C.

And 4, CASTLE STREET ARCADE, LIVERPOOL.

Agents for Scotland:—

The Glasgow Patents Co., Ltd., 120, Gt. Wellington St., GLASGOW.

Agents for Nottinghamshire and Lincolnshire:—

W. Robinson, (Nottingham) Ltd., 7 & 9, Victoria St., NOTTINGHAM.

Agents for Leicestershire:—

W. Robinson, (Nottingham) Ltd., Churchgate, LEICESTER.

THE KAHN SYSTEM OF REINFORCED CONCRETE

THE
TRUSSED
CONCRETE
STEEL
COMPANY,
LIMITED.

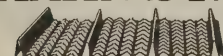


100,000 Gallon
Water Tower for
N.E. Railway at
YORK.

It is an established fact that the **KAHN SYSTEM** of Concrete Reinforcement develops the full strength of the material used, and complies with every requirement of engineering science applied to constructional work.

Every class of structure has been successfully erected on the Kahn System, including Bridges, Gantries, Reservoirs, Piers, Aqueducts, Foundations of all kinds, Gas Tanks, Public Buildings, Hotels, Warehouses, Hospitals, Staircases, Roofs, &c. &c.

KAHN SYSTEM OF REINFORCED CONCRETE



KAHN HY-RIB LATHING.



KAHN TRUSSED BAR.



KAHN RIB BAR.

We invite your enquiries and will send Handbooks post Free on Application to -

THE TRUSSED CONCRETE STEEL COMPANY LTD

52, Caxton House, Westminster.

"KILLS ALL INSECTS AND DESTROYS THEIR EGGS."

About 5 Gallons.
Drums Free.



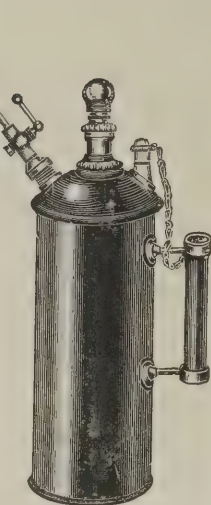
SOLUTION



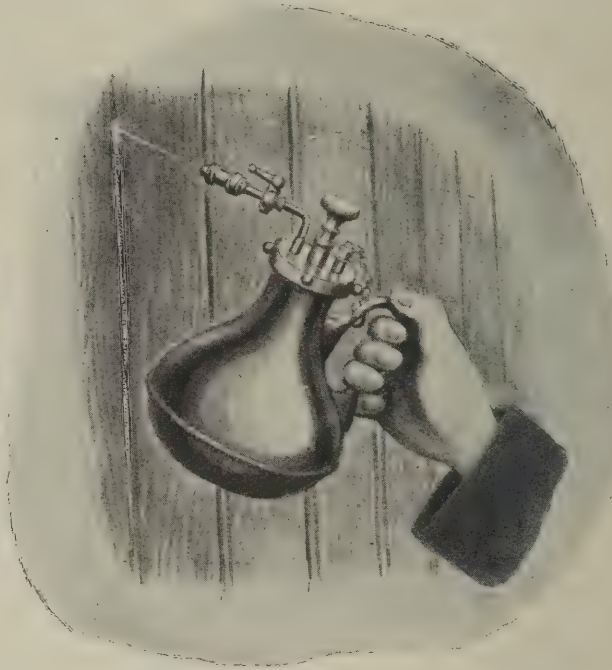
PRICE 16/- EACH
NETT.

FOR THE
EXTERMINATION OF

**BUGS, FLEAS,
COCKROACHES,
AND OTHER
INSECT PESTS.**



Large sprayer,
Capacity 4 pints,
30/- nett.



Small Sprayer, Capacity 1 pint, 20/- nett.

Please mention this paper.

R. SUMNER & CO., LTD., Manufacturing Chemists,
50a, Lord Street, LIVERPOOL.

"FLEXIBLE AS A KID GLOVE."

UNDER
3D
PER
YARD

THE PERFECTED PAINT

elure

GIVES THE
FINEST FINISH
AT THE
LOWEST COST
BECAUSE WITH
FEWEST COATS
STANDS THE
HARDEST WEAR
FOR THE
LONGEST TIME
AND IS
EASIEST CLEANED
BECAUSE

SO smooth
and
elastic
that it
does not
CRACK,
CRAZE,
CHIP or
BLISTER

IF YOU DOUBT ANY OR ALL
OF THESE STATEMENTS, **TEST THEM.**
PROVED BY LETTERS FROM HUNDREDS OF USERS.
WRITE FOR 20PP HANDBOOK. Name this Publication,
C. CHANCELLOR & Co.Ltd.13 Clerkenwell Rd. London

Decide to use Ceresit

Wherever you wish to
exclude moisture or damp
decide to use Ceresit. By
doing so you are **guaranteed**—not
promised—an absolutely "dust-dry"
structure under all conceivable conditions.

Ceresit, the **sure** Waterproofing, **keeps buildings proof** against
damp or water percolation, even though subjected to heavy
pressures. It is the cheapest, the simplest, and the
only thoroughly efficient waterproofing medium known.

For figures, facts and formulæ
get Ceresit Booklet No. 70
Post free on request. - - -



The BRITISH CERESIT WATERPROOFING CO., Ltd.
68, VICTORIA STREET, LONDON, S.W.

Agents:—

THE CONTRACT AND WORKS SUPPLY CO., 41, Corporation Street, Manchester;
16, Savile Street, Sheffield; and Scunthorpe.
CASEBOURNE & Co., Haverton Hill, Middlesbrough.
JAMES P. CORRY & Co., LTD., 8, City Quay, Dublin; Talbot Street, Belfast.
LACEY, LINCOLN & Co., LTD. 32 St. Giles Street, Norwich.

E.H.G.

CERESIT

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

July 1.—POST OFFICE EXTENSION, Peterborough.—Extension of Peterborough Post Office for the Commissioners of H.M. Works and Public Buildings. Drawings, specifications, and a copy of conditions and form of contract may be seen on application to the Postmaster at Peterborough Post Office. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

July 1.—COTTAGES, Stratford-upon-Avon.—Erection of workmen's cottages in blocks of six, on land adjoining Birmingham Road, for the Town Council. Plans and specifications may be seen, and bills of quantities and form of tender obtained, at the office of Roden Dixon, Borough Surveyor, Municipal Offices, Stratford-upon-Avon, upon deposit of £2. Tenders must be delivered to the Town Clerk, R. Lunn, 1, Sheep Street, Stratford-upon-Avon.

July 1.—HOUSE, Hereford.—Erection of a house in connection with the Victoria Eye and Ear Hospital, Hereford. Plans and specifications may be seen at the offices of Nicholson and Clarke, Architects and Surveyors, Cathedral Chambers, Hereford. Bills of quantities will be supplied on deposit of £2 2s. Tenders to be delivered at the Hospital, addressed to the Secretary.

July 1.—ALTERATIONS, Workington.—Execution of the several works required in the alterations to the Carnegie Lecture Hall. Full particulars may be obtained on application to H. Bowman Williams, Borough Engineer and Surveyor, Town Hall, Workington.

July 1.—LAUNDRY, London, W.—Erection of a public laundry, containing approximately 30 washing troughs and a similar number of drying horses, together with the necessary equipment, at the rear of the Kensal Road Baths, for the Paddington Borough Council. Forms of tender and specification will be furnished upon application to the Borough Surveyor.

July 1.—MORTUARY, Hendon.—Erection of a public mortuary and other buildings near the Council offices, etc., for the U.D.C. The drawings and specification may be seen, and forms of tender obtained, of S. Slater Grimley, M.Inst.C.E., Engineer and Surveyor to the Council, at the Council Offices, on deposit of £2 2s.

July 1.—LABORATORY, Exminster.—Erection of a new pathological laboratory at the Devon County Lunatic Asylum, Exminster, for the Committee of Visitors of the County Lunatic Asylum. The plans and specifications can be seen at the office of the County Architect, E. H. Harbottle, Queen Street, Exeter. Bills of quantities can be obtained from F. Bailey, Clerk to the Committee, Castle of Exeter, on deposit of £2, to whom tenders are to be sent.

July 1.—SCHOOL ALTERATIONS, ETC. Stockton-on-Tees.—Alterations to the secondary schools, Nelson Terrace, for the Education Committee. Plans and specification may be seen, and quantities obtained at the Borough Engineer's Offices. Tenders to be sent to M. H. Sykes, Borough Engineer, Town Hall, Stockton-on-Tees.

July 1.—LAUNDRY, ETC. Canterbury.—Erection of a laundry, boiler-house, and chimney shaft at the Workhouse, Canterbury, for the Guardians. Plan and specification can be seen and bills of quantities and forms of tender obtained on application to the Architect, F. H. Dore, 25, Watling Street, Canterbury, on deposit of £2 2s. Tenders to be delivered to John Plummer, Clerk to the Guardians, 80, Castle Street, Canterbury.

July 2.—SCHOOL ALTERATIONS, ETC. Liverton Mines (Yorks).—Alterations and improvements at the Liverton Mines Council School, for the North Riding of Yorkshire County Council Education Committee. Plans and specification may be seen and forms of tender obtained on application at the school. Tenders to be delivered to J. C. Wrigley, Secretary, Education Offices, Northallerton.

July 2.—RE-ROOFING, ETC. Breage.—Re-roofing and renovation of the Carleen Chapel, Breage. Specifications may be seen on application to J. Pryor, Pengwedna, Breage, and tenders should be sent to Rev. T. Hosking, Porthleven.

July 2.—CHAPEL, Dundalk.—Erection of a mortuary chapel in the Catholic grounds of St. Patrick's Cemetery, Lowdallshill, for the Dundalk Joint Burial Board, in strict accordance with the plans and specifications prepared by M. Sellars, M.I.C.E., Architect, which can be seen at his office, Town Hall, Dundalk. Forms of tender can be had from the Architect on deposit of £2. Tenders to be sent to P. R. Finigan, Secretary, Town Hall, Dundalk. Sureties required.

July 2.—SCHOOL EXTENSION, Luton.—Erection of the Old Bedford Road school extension, for the Town Council. Plans, conditions of contract, and specifications may be inspected at the office of the Borough Engineer, Town Hall, and form of tender obtained on deposit of 10s. 6d. Tenders are to be delivered to B. Penny, Town Clerk, Town Hall, Luton.

July 2.—SCHOOL ALTERATIONS, ETC.—Mountain Ash.—Executing extensive alterations, etc., to the Duffryn Boys' School, Mountain Ash for the Education Committee. Plans and specifications may be seen, and forms of tender obtained, at the office of the Architect, W. H. Williams, M.S.A., Town Hall, Mountain Ash. Tenders must be sent to A. Morgan, Director of Education, Town Hall, Mountain Ash.

July 2.—WARDS, ETC. Manchester.—Erection of new lunatic wards and drainage at the Withington Workhouse for the Guardians. Plans can be seen at and quantities obtained from the offices of Fredk. H. Overmann, F.M.S.A., 48, King Street, Manchester, upon deposit of £1 1s. Tenders to be delivered to David S. Bloomfield, Clerk, Guardians' Offices, All Saints', Manchester.

July 2.—MORTUARY, ETC. Watford.—Erection of a mortuary and post-mortem room, and for additional boiler-house accommodation at the Watford Union House, for the Board of Guardians. Drawings, specification, and a copy of the conditions and forms of contract may be seen upon application to W. H. Syme, F.R.I.B.A., Architect, at 58a, Vicarage Road, Watford, of whom bills of quantities and forms of tender may be obtained upon deposit of £1 1s. Tenders to be sent to Frederick Wilson, Clerk to the Guardians, Watford Place, Watford.

July 3.—POST OFFICE EXTENSION, Aylesbury.—Extension of Aylesbury Post Office for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and copy of the conditions and form of contract may be seen on application to the Postmaster at Aylesbury Post Office. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

July 3.—LABORATORY, London, E.—Erection of a bacteriological laboratory at their Public Health Offices, White Horse Street, Ratcliff, Stepney, for the Stepney Borough Council. Copies of the stipulations, schedule, and form of tender may be obtained by applying to the Borough Engineer, M. W. Jameson, A.M.I.C.E., Municipal Offices, 15, Great Alie Street, Whitechapel, E., upon deposit of £5. Tenders must be sent to Geo. W. Clarke, Town Clerk, Municipal Offices, 15, Great Alie Street, E. Fair wages clause.

July 3.—SCHOOL ALTERATIONS, ETC. Somerton.—Alterations and additions at the Church of England Schools, Broad Street, for the Managers, in accordance with plans and specification prepared by the Architect, R. Bowring, of Wells, Somerset. Contract plans and specification may be seen with Jno. S. Taylor, Correspondent, Somerton, to whom tenders are to be sent.

July 4.—COTTAGES, Whitehaven.—Building 18 new cottages at Kells, Whitehaven. Plans and specification can be seen at Somerset House, Whitehaven. Tenders to be sent to E. L. Nanson, Somerset House, Whitehaven.

July 4.—MANUAL TRAINING ROOM, Banstead (Surrey).—Building a manual training room at their school, Banstead, Surrey, for the managers of the Kensington and Chelsea School District. A copy of the specification, form of tender, and drawing may be obtained at the offices of their Architect, Cecil A. Sharp, 2, Verulam Buildings, Gray's Inn, W.C., upon deposit of £5. Tenders must be delivered to Henry D. Aslett, Clerk to the Board of Management, Marlesford Lodge, 241 King Street, Hammersmith, W.

July 4.—RESIDENCES, Leeds.—Erection of a pair of semi-detached residences, off York Road, Leeds, for T. Anderton and E. H. Hazzlewood. Plans and specifications may be seen, and quantities obtained at the offices of T. A. Buttery, Lic.R.I.B.A., Architect, Queen Street, Morley, and 1, Basinghall Square Leeds, to whom tenders are to be sent.

July 4.—RESIDENCE, Leeds.—Erection of villa residence, off York Road, Leeds, for O. H. Pinder. Plans and specifications may be seen, and quantities obtained at the office of T. A. Buttery, Lic.R.I.B.A., Architect, Queen Street, Morley, and 1, Basinghall Square, Leeds, to whom tenders are to be sent.

July 4.—SCHOOL, Carnant.—Building a new school (accommodation 514) at Garnant, Amman Valley, for the Carmarthenshire County Council. Plans and specifications may be seen and full particulars obtained at the office of W. V. Morgan, A.R.I.B.A., County Architect, County Education Offices, Carmarthen. Tenders are to be delivered to J. W. Nicholas, County Education Offices, Carmarthen.

July 4.—SCHOOL ALTERATIONS, Pengo.—Alterations and new exits at the Melvin Road school, and redecoration, etc., to various schools for the Penge U.D.C. Education Committee. Specifications and forms of tender may be obtained at the office of the Surveyor, W. H. Longdin, Town Hall, Anerley S.E., upon deposit of £1 1s. Tenders to be sent to C. G. Liddle, Clerk to the Committee, Anerley, S.E.

July 5.—SCHOOL, Sicklinghall (Yorks).—Execution of the following works for the West Riding Education Committee: Sicklinghall New School (builder, joiner, slater, plumber, plasterer, painter, and ironfounder and smith). Plans may be seen and specification with quantities obtained on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the office of the Divisional Clerk, Harrogate. A deposit of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

July 5.—POST OFFICE EXTENSION, Bedford.—Extension of Bedford Post Office for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster at Bedford Post Office. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London S.W., on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

(Contracts continued on page x.)

Telegrams: "DRY WAINSCOT, LONDON."
Telephone: 1339 London Wall. 3746 Central.

WM. OLIVER & SONS, LTD.,
Thoroughly Seasoned Wainscot,
Mahogany, Walnut, Teak, and other
Hardwoods, in all Thicknesses.

Austrian Wainscot Logs and Planks.

Office: 120, BUNHILL ROW, LONDON, E.C.

OAK PANELLING

CHIMNEYPIECES
FITMENTS
CARVING
JOINERY



COMPETITIVE ESTIMATES.
WRITE FOR BOOKLET.

ALEX. G. LEE

14, JOHN ST, BEDFORD ROW, LONDON.

TELEPHONE 12756 CENTRAL.
GRAMS: DAMCORM, LONDON.

July 5.—**CHURCH, ETC. Forfar.**—Execution of mason, carpenter, slater, plaster, plumber, painter, and glazier works required in the erection of the Lowson Memorial Church, manse, and hall at Forfar. Plans may be seen at the office of Gavin and Souter, Forfar. Applications for schedules to be made to A. Marshall Mackenzie and Son, Architects, 343, Union Street, Aberdeen, to whom tenders are to be sent.

July 5.—**SCHOOL. Airtion (Yorks).**—Execution of the following works for the West Riding Education Committee: Airtion New School (builder, joiner, slater, plumber, plasterer, painter, ironfounder and smith, and asphalt). Plans may be seen and specification with quantities obtained on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the office of the Divisional Clerk, Settle. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

July 5.—**SCHOOL ADDITIONS. Rothwell Carlton (Yorks).**—Execution of the following works for the West Riding Education Committee: Rothwell Carlton Council School Additions (builder, joiner, slater, plumber, plasterer, and painter). Plans may be seen, and specifications and quantities obtained, on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the school. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

July 5.—**CARETAKER'S HOUSE. Thrybergh (Yorks).**—Execution of the following works at Thrybergh Council School for the West Riding Education Committee, erection of caretaker's house (builder, joiner, roof tiler, plumber, plasterer, and painter). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the school. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

July 5.—**CARETAKER'S HOUSE. Conisbro' (Yorks).**—Execution of the following works at Conisbro' Balby Street Council School, for the West Riding Education Committee. Erection of Caretaker's House (builder, joiner, slater, plumber, plasterer, and painter). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the school. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

July 5.—**SCHOOL. Chalfont St. Peter (Bucks).**—Erection of a new boys' school at Chalfont St. Peter, Bucks, for the managers. Forms of tender, specification, and bills of quantities may be obtained from the Architects, Wills and Anderson, 24, Bloomsbury Square, London, W.C. (where the plans may be seen), on deposit of £2 2s. Tenders may be sent to R. H. Rushforth, Correspondent, Amersham.

July 6.—**PUBLIC BATHS. Brighouse.**—Erection of proposed public baths in Mill Boyd Street, Brighouse, for the Corporation. Plans may be seen and specifications, builder's quantities, and forms of tender obtained on application to S. F. Haywood, Borough Engineer, Municipal Offices, Brighouse, on deposit of £1 is. Tenders to be sent to Jas. H. Rothwell, Town Clerk, Town Clerk's Office, Municipal Offices, Brighouse.

July 6.—**CHAPEL, ETC. Ellesmere Port.**—Execution of the following for the Ellesmere Port and Whitby U.D.C.: (1) Erection of cemetery chapel, tool-house, and conveniences, fencing, entrance gates, etc. (2) Laying of a 9 in. pipe sewer, construction of manholes, etc. Plans may be inspected, and specifications and forms of tender obtained at the Office of Thos. W. Francis, Clerk to the Council, Council Offices, Ellesmere Port, to whom tenders are to be sent.

July 8.—**ALTERATIONS TO OFFICES. Fails-worth.**—Alterations and additions proposed to be made to the Council offices, Oldham Road, Fails-worth, for the U.D.C. The plans and drawings may be seen and a copy of the form of tender, conditions of contract, specification, and bills of quantities obtained at the office of W. M. Shimmin, C.E., Surveyor to the Council, Oldham Road, Fails-worth, on deposit of £2. Tenders must be sent to H. C. Broome, Clerk to the Council, Council Offices, Fails-worth. Fair wages clause.

July 8.—**HOUSES. Machen.**—Erection of 30 houses at Machen, Mon., for the Machen No. 1 Building Club. Plans and specifications may be seen and all particulars obtained at the office of Philip J. Jones, Architect, Church Street, Pontypridd. Tenders to be sent to G. D. Jenkin, Chatham Villa, Machen.

July 9.—**POST OFFICE ALTERATIONS. Stirling.**—Alterations and additions to Stirling Post Office for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract, may be seen on application to the Postmaster at Stirling Post Office. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on deposit of £1 is. Tenders must be delivered to the secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

July 9.—**BRIDGE. Lancashire.**—Construction of Penwortham bridge and approaches over the River Ribble in the township of Penwortham and County Borough of Preston for the Lancashire County Council. The bridge will be 60 feet in width between parapets, and consist of 3 skew spans, each of 90 feet, the whole to be constructed in masonry. The approaches consist of about 500 lineal yards of new road 60 feet wide, and about 100 lineal yards of new road 45 feet wide; also about 270 lineal yards of main road widening. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridge-master's Office, Preston.

July 10.—**MORTUARY ALTERATIONS. London, W.C.**—Alterations of the public mortuary, Goldsmith Street, and Macklin Street, Drury Lane, W.C., for the Holborn B.C., and other works incidental thereto, in accordance with the drawings and specification prepared by the Borough Surveyor, E. F. Spurrell. Tenders must be delivered to the Town Clerk, Council Offices, Nos. 193-197, High Holborn, W.C.

July 10.—**ADDITIONS, ETC. Cwmgorse.**—Erection of additions and alterations to New Star Hotel, Cwmgorse. Plans and specification may be seen with John Watkins, New Star Hotel, Cwmgorse, to whom tenders are to be sent.

July 11.—**LIBRARY. London, N.E.**—Erection of a branch library building in Brooksbys Walk, Homerton, for the Hackney B.C. Plans and specifications may be seen, and bills of quantities, with conditions, form of tender, and form of contract, may be obtained at the office of the Architect, E. Cooper, F.R.I.B.A., 12, Gray's Inn Square, W.C., on deposit of £2 2s. with W. A. Williams, Town Clerk, Town Hall Hackney. Fair wages clause.

July 16.—**PUBLIC OFFICES. London, S.W.**—Extension of the new public offices, Westminster (superstructure), for the Commissioners of H.M. Works and Public Buildings. Drawings, specifications, and a copy of the conditions and form of contract may be seen on application to Sir Henry Tanner, at H.M. Office of Works, etc. Bills of quantities and forms of tender may be obtained from the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W., on deposit of £1 is., to whom tenders are to be sent.

ENGINEERING.

July 4.—**PLANT. Dewsbury.**—Supply of the following for the Corporation: (26a) one 1,000-kw. turbine; (26b) two 500-kw. direct-current generators; (26c) jet-condensing plant for above. Specifications, with form of contract, may be obtained from R. H. Campion, Borough Electrical Engineer, Bradford Road, Dewsbury, on deposit of £1 is. Tenders must be sent to H. Ellis, Town Clerk, Town Hall, Dewsbury.

July 8.—**SUPERSTRUCTURE. Hull.**—Renewal of the superstructure of the bridge carrying the Victoria Dock branch over the Foredyke Stream at Hull for the North-Eastern Railway. The work consists of about 65 tons of steelwork, together with asphalt, and includes the removal of the existing girders and the erection of the new work. Plans and specification may be seen and detailed quantities and form of tender obtained on application at the office of C. F. Bengough, the Company's Engineer at York. Tenders must be sent to R. F. Dunnell, Secretary, York.

July 24.—**PLANT. London, N.**—Supply and erection of machinery and plant, as under, for the Lighting Committee of the Islington Borough Council: 3,000 kilowatt steam turbine alternator, exciter, condensing plant, switch-gear, circulating and steam piping, together with other accessories. Specification, general conditions, and form of tender may be obtained on application to the Electrical Engineer, 50, Eden Grove, Holloway, London, N. A deposit by cheque of £2 2s. will be required. Tenders to be addressed to Wm. F. Dewey, Town Clerk, Town Hall, Upper Street, Islington, London, N.

(Contracts continued on page xii.)



YALE

No Locks are Yale Locks unless made by Yale & Towne.

No new building can be called absolutely modern and up to date unless all the doors are fitted with

The YALE Blount Door Check and Spring

This ingenious contrivance brings a sense of luxury, quietness, and refinement into the home or office which makes one wonder how the old methods of slamming and banging doors could possibly have been tolerated. Doors fitted with the Yale Blount Door Check and Spring can't be left open, can't slam, can't blow open. It holds the door open in any desired position, or closes it automatically at a touch—gradually, gently, but firmly—just the click of the latch is all that you hear.

The Yale Blount Door Check and Spring can be easily fixed up on any kind of door to open from either left or right hand. There are several points about the Yale Blount Door Check and Spring which we would like to explain to you more fully. Will you let us send you a little booklet about it?

Send us a Postcard Now.

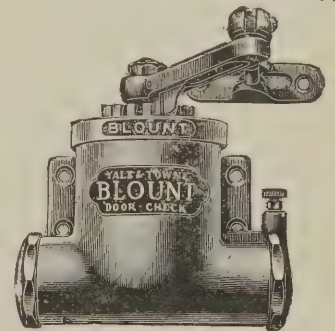
THE YALE & TOWNE COMPANY,

17-20, West Smithfield, London, E.C.

Telegrams: "Yaletowne, London."

Telephones: 7660 and 7661 City.

[101]



Economical Designs and Plans for all Classes of Steelwork submitted at Short Notice.

BRITISH STANDARD SECTIONS OF

JOISTS, CHANNELS, TEES, ANGLES, PLATES, ETC.

AND ALL

CONSTRUCTIONAL STEELWORK

CAN BE DELIVERED FROM LONDON STOCK.

WE WOULD LIKE TO SEND YOU PARTICULARS OF OUR WORK.

Address all Communications to

DREW-BEAR, PERKS & Co., Ltd.,

110, CANNON STREET, LONDON, E.C.

Telephone: 12110 CENTRAL.

Telegrams: "BEARBIND, LONDON."

Works:

BATTERSEA STEEL WORKS,
WELLINGTON ROAD, S.W.

Telegrams: "MECHANURGY."

Telephone: No. 920 WESTERN.

F.A.B.

SANITARY ENGINEERING.

July 2.—**SEWAGE WORKS EXTENSIONS. Woodford (Essex).**—Construction of detritus tanks, percolating filters, humus tanks, etc., for the Woodford U.D.C. Forms of tender, bills of quantities, etc., may be obtained from W. Farrington, Engineer and Surveyor, Council Offices, Woodford Green, upon deposit of £2 2s. Fair wages clause.

July 2.—**SEWERS. Wilton (Wilts).**—Constructing and maintaining about 410 yards of 12 in., 280 yards of 8 in., and 95 yards of 6 in. cast-iron pipe sewers, together with manholes, flushing chamber, etc., and other works in connection therewith, for the Corporation. Plans, sections, and specifications may be inspected, and bill of quantities, and forms of tender obtained at the Salisbury offices of the Engineers, Lemon and Blizard, M.M.I.C.E., Roman Road, Bemerton, Salisbury, upon deposit of £3. Tenders to be sent to the Town Clerk at the Municipal Offices, Wilton, Salisbury.

July 3.—**DRAINAGE AND WATERWORKS. Donaghadee.**—Execution of the following for the U.D.C.: (1) Supplying and laying about five miles of 7 in., 6 in., 4 in., and 3 in. cast-iron water mains, together with the necessary valves, hydrants, and other fittings; (2) erection and completion of a pumping station, consisting of engine and pump house, gas producer house, together with engine bed, foundations, and other works incidental to the contract; (3) provision and erection of a duplicate set of 20-h.p. suction gas engines and plant, together with duplicate set of three-throw horizontal pumps, and other works incidental to the contract; (4) erection and completion of a ferro-concrete water tower, 50 ft. high, with a capacity of 40,000 gallons, and other works incidental to the contract; (5) supplying and laying about 3½ miles of sewers 18 in., 15 in., 12 in., and 9 in. diameters, with manholes, lamp-eyes, and flushing chambers, together with cast-iron sea outfall sewer, and other works incidental to the contract. Plans may be seen, and specifications, quantities, and forms of tender obtained, at the offices of the Engineer to the Council, H. J. Weaver, M.I.C.E.I., M.I.M.E., F.G.S., Northgate Mansions, Gloucester, on deposit of a £5 note. Plans can also be seen at the Clerk's Office. Tenders must be sent to D. Walker, Clerk, Council Offices, Donaghadee, co. Down.

July 9.—**SEWERAGE WORKS. Fakenham (Norfolk).**—Construction of new sewerage and sewage disposal works for the town of Fakenham, for the Walsingham R.D.C. Plans can be seen, and conditions of contract, specifications, bills of quantities, and forms of tender and full particulars obtained, on deposit of £5, at the offices of the Council's Engineer, E. J. Silcock, M.I.C.E., Sanctuary House, Tothill Street, Westminster, and 10, Park Row, Leeds. Tenders must be delivered to R. S. Butcher, Clerk, Fakenham.

July 10.—**SEWERAGE WORKS. Wolverhampton.**—Construction of sedimentation tanks, filters, and other works at the sewage outfall site at Whittington, and for about 6,600 yards lineal of cast-iron and stoneware pipe outfall and collecting sewers (varying from 12 inches to 7 inches in diameter), with the requisite manholes, flushing chambers, and ventilating shafts thereon, together with other works in connection with the sewerage of Kinver for the Selsdon R.D.C. Plans, sections, and drawings can be seen, and specification, bill of quantities, and form of tender obtained at the offices of William Fiddian, Civil Engineer, Stourbridge, on deposit of £3 3s. Fair wages clause. Sureties required. Tenders to be delivered to H. Taylor, Clerk to the Council, Lichfield Street, Wolverhampton.

IRON AND STEEL.

July 3.—**ROOF. Sheffield.**—Supply and erection of a steel roof, in two spans, for a purifier house, 225 ft. long by 91 ft. 10 in. wide, at their Grimesthorpe works, for the Sheffield United Gaslight Co. Drawings may be seen and specification, with quantities, obtained upon application to the engineer, J. W. Morrison, M.I.C.E., Commercial Street, Sheffield. Tenders must be delivered to Hanbury Thomas, Managing Director.

July 4.—**STAIRCASE. Penge.**—Supply and erection of an outside staircase at the Melvin Road Council School, Penge, for the Penge U.D.C. Specifications and forms of tender may be obtained at the Office of the Surveyor, H. W. Longdin, Town Hall, Anerley, S.E., upon deposit of £1 1s. Tenders to be sent to O. G. Liddle, Clerk to the Education Committee, Town Hall, Anerley, S.E.

PAINTING.

July 1.—**PAINTING, ETC., SCHOOL. Hipswell (Yorks).**—Distemping, painting, and varnishing the interior of the Hipswell C.E. School, for the Managers. Tenders to be sent to the Chairman, Harley Hill, Catterick, Yorks, from whom full particulars may be obtained.

July 3.—**CLEANING AND PAINTING. London, S.W.**—Cleaning and painting the outside of the town hall and interior corridors, for the Chelsea Borough Council, in accordance with conditions, specification and form of tender, printed copies of which, together with information respecting the same, may be obtained at the Office of the Borough Surveyor, T. W. E. Higgins, Town Hall. Tenders to be sent to T. Holland, Town Clerk, Town Hall, King's Road, S.W.

July 3.—**CLEANING AND PAINTING. London, E.C.**—Cleaning and painting works at the following Institutions for the Metropolitan Asylums Board: (1) Bridge Industrial Home, Witham, Essex (2) White Oak School, Swanley Junction, Kent, in accordance with specifications prepared by W. T. Hatch, M.I.C.E., M.I.M.E., Engineer-in-Chief. The specifications and forms of tender may be inspected at the office of the Board, Embankment, E.C., and obtained on deposit of £1.

July 9.—**SCHOOLS. Walthamstow.**—Painting, colouring, etc., to be executed in the renovation of various schools and sundry interior improvements for the Walthamstow Education Committee as follows: William Morris School.—3 floor block and out-buildings, interior and exterior renovation. Coppermill Road Schools.—Interior renovation and the construction of dormer windows, skylights, etc. Wood Street Schools.—Exterior painting and the construction of glazed partition, and small interior alterations. Selwyn Avenue (junior department).—Interior renovation only. Together with sundry other work. Specifications may be seen, and forms of tender obtained on application to H. Prosser, M.S.A., Architect to the Committee, at the offices. Tenders to be addressed to T. W. Liddiard, Secretary to the Committee, Education Offices, High Street, Walthamstow. Fair wages clause.

(Contracts continued on page xiii.)

DEUTSCHE ETERNIT GESELLSCHAFT HAMBURG.

Fireproof

Weather-
proof



Splendid
Roofing and
Lining
Material

SOLE SELLING AGENT FOR U.K. REQUIRED

Please write to Box 7162, Architects' & Builders' Journal, Caxton House, Westminster, S.W.

WILLESSEN UNDERLINING PAPER

FOR ALL
CLIMATES.

WATER-PROOF, ROT-PROOF,
INSECT-PROOF.

For Underlining Slates, Tiles, Iron Buildings, with or without Boards. For laying on joists. Placed under Floor Boards excludes damp and deadens sound. Also for damp walls.

WILLESSEN PAPER AND CANVAS WORKS, LTD., WILLESSEN JUNCTION, LONDON, N.W.

ESTABLISHED 1870.

Telegrams: "Impermeable, London."

Telephone No. 1165 Willesden.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, Carlton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Saturday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Basingstoke.—For (1) erection of cemetery chapel, lodge, boundary wall railing and entrance gates; (2) for about 392 yards of oak park fencing, 6 ft. high, for the Basingstoke Burial Board. Mr. F. R. Phipps, A.M.I.C.E., Surveyor:—

Cemetery Chapel, Lodge, etc.	
C. Grace and Sons, Clatford, Andover	£2,160 0 0
M. E. Pitt, Oxford Road, Reading	2,085 0 0
A. G. Butler, Peppard, Henley-on-Thames	2,071 16 4
H. J. Goodall and Sons, Basingstoke	2,056 0 0
Martin, Wells and Co., Aldershot	2,055 7 0
E. C. Hughes, Wokingham	2,023 0 0
J. E. Franklin and Co., Portswood, Southampton	1,982 0 0
H. Jones and Son, Somers Road, Southsea	1,931 13 4
J. Harris, Basingstoke	1,926 6 0
Smallbone and Sons,* Streatham-on-Thames	1,895 0 0

*Accepted.

Belper.—For erection of an electric palace of varieties, King Street, Belper, for Mr. T. Moorley. Mr. E. B. Dean, M.S.A., Architect, Market Chambers, Mansfield:—

L. Brown, Belper	£2,100 0 0
J. W. Haynes, Belper	2,000 0 0
J. and F. L. Parsons, Bulwell	1,969 0 0
Harris and Hunt, Marchay, Derby	1,960 10 10
W. Corah and Son, Loughborough*	1,879 0 0

*Accepted.

Crowland (Peterborough).—For erection of 20 houses, New Road and Crease Drove, Crowland, for the Crowland R.D.C. Messrs. J. G. Stallebrass, M.S.A., and Sons, Architects, North Street, Peterborough.

G. Brown	3,432 8 6
G. W. Heath, March	3,390 0 0
D. Gray	3,363 0 0
J. Bridgefoot	3,351 0 0
J. Hicks	3,279 0 0
R. S. Jellings	3,100 0 0
J. Guttridge	3,098 0 0
T. Measures	3,050 0 0
Godwin and Coley, Crowland	3,042 0 0
Rose and Sons, Whittlesey..	2,999 0 0
J. Crane*	2,899 16 0

(Rest of Peterborough.)
*Accepted provisionally.

Croydon.—For erection of a block of shops in the Brigstock Road, Croydon. Mr. E. A. Tyler, 11, Queen's Walk, Ealing, Surveyor:—

E. W. Gadd	£1,825 0 0
H. E. Percy	1,750 0 0
G. Wade	1,399 10 0
J. C. Isaacs	1,400 0 0
S. Hathaway	1,360 0 0
Green*	1,320 0 0
Architect's estimate	1,350 0 0

*Accepted.

Durham.—Accepted for erection of a new church institute. Mr. W. H. Wood, F.R.I.B.A., Architect, Newcastle-on-Tyne:—C. W. Gibson, Durham, £2,078.

Earlestown.—Recommended for acceptance for the erection of the Council school in Paterson Street, for the Education Committee:—D. A. Ablett and Sons, Wigan, £10,145.

Evesham.—For erection of cottages under the Housing of the Working Classes Act at Broadway, for the Evesham R.D.C. (Scheme No. 1) tender for the erection of 30 cottages; (Scheme No. 2) tender for the erection of 60 cottages. Messrs. Dicks and Waldron, Architects, 12, Market Place, Evesham:—

H. Morgan, Birmingham	£6,354 11 0
Tilt Bros., Bromsgrove	6,127 10 0
H. James, Sutton Coldfield	6,175 0 0
J. Smith, Erdington	5,923 0 0
R. Bowen, Cheltenham	5,900 0 0
G. Henson and Son, Wellingborough	5,642 0 0

A. Cliff and Co., Evesham	5,490 0 0
Kirk and Randall, Woolwich	5,475 0 0
Espley and Co., Ltd., Evesham	5,200 0 0
G. Lough, Birmingham	5,079 0 0
J. Bridgewater, Cradley Heath, Staffs	4,775 11 6
G. Field, Blackheath	4,667 16 8
Sixty Cottages	
H. Morgan	12,709 10 0
Tilt Bros.	12,242 10 0
H. James	11,636 19 4
J. Smith	11,837 0 0
R. Bowen	11,600 0 0
G. Henson and Son	11,269 0 0
A. Cliff and Co.	10,850 0 0
Kirk and Randall	10,838 0 0
Espley and Co., Ltd.	10,350 0 0
G. Lough	10,111 0 0
J. Bridgewater	9,422 13 0
G. Field	9,325 13 4

*Provisionally accepted.

Great Yarmouth.—For the erection of new block to the Union Infirmary for the Board of Guardians. Arthur S. Hewitt, A.R.I.B.A., Architect, Bank Chambers, Great Yarmouth:—

J. Eastoe	£5,274 16 0
F. Grimble	5,230 0 0
Carter and Wright	5,212 0 0
J. D. Harman	5,190 0 0
Moore and Sons	5,100 0 0
B. G. Beech	5,089 0 0
J. Balls	5,065 0 0

All of Yarmouth.

Harwich.—For erecting fire station (exclusive of hose tower) and public convenience, for the Town Council:—

Fisher and Woods, Dovercourt	£1,247
T. W. Trudgett, Colchester	1,156
Cubitt and Gott, Ipswich	1,150
Grimwood and Sons, Sudbury	1,149
Blay and Co., Dartford	1,079
E. E. Newton,* Harwich	1,041

*Accepted.

Llandaff.—Accepted for erection of a new infants' Council school at Llandaff, for the Glamorgan County Council. Mr. D. Pugh-Jones, M.S.A., Cardiff, County Architect:—S. Shail, Llandaff, £3,818.

(Tenders continued on page xiv.)

"VICTOR" SPRING HINGES FOR VERY SHALLOW FLOORS, AND OTHER STANDARD PATTERNS.

Sealed Cylinder
Check.

ROBERT
ADAMS,
Patentee.



3 & 5,
Emerald
Street,
LONDON,
W.C.

Immunity from
Oil-Stained Floors.

The "SCEPTRE" VICTOR. (Full Depth, 1 1/4 in.). Double-Action Shallow Box Spring Hinge, Nos. 22 and 24. N.B.—Patterns Nos. 1 and 23 have Two Internal Springs.

Specification—The "Sceptre Victor."
Double-Action Shallow Spring Hinge.

Specification—The "Gem Victor."
Single-Action Shallow Spring Hinge.

The "NEW GEM" VICTOR.
Single-Action Shallow Box Floor Spring Hinge. Only 1 1/4 in. deep overall.
Full particulars on application.

Telegrams:—"ENLIGHTEN, LIVERPOOL."

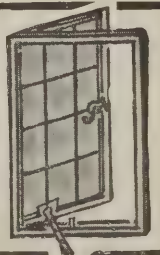
Telephone:—365 OLDSWAN.

THE REA METAL CASEMENTS Ltd.,

KNOWSLEY WORKS, STANLEY, LIVERPOOL.

Manufacturers of METAL WINDOWS OF EVERY DESCRIPTION, LEADED, GLAZING, STAINED GLASS, etc.

CONTRACTORS TO H.M. GOVERNMENT.



E.H. SHORLAND & BROS. LTD.

PATENTEES AND SOLE MAKERS
OF THE MANCHESTER GRATE,
STOVE AND VENTILATORS.

THE MANCHESTER STOVE WORKS.

TELEGRAMS. SHORLAND, FAIRSWORTH.
NAT. TEL. NO. 319 FAIRSWORTH. FAIRSWORTH, MANCHESTER.

London, N.W.—For erection of a new police station and petty sessional courthouse at Hampstead. Mr. J. D. Butler, F.R.I.B.A., Surveyor, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—

W. Willett	£17,900
J. Jarvis and Sons, Ltd.	17,800
W. Pattinson and Sons, Ltd.	17,455
Holloway Bros. (London), Ltd.	16,930
J. Willmott and Sons	16,914
Kilby and Gayford, Ltd.	16,862
G. E. Wallis and Sons	16,854
G. Trollope and Sons and Colls and Sons, Ltd.	16,750
Sabey and Son, Ltd.	16,720
F. and H. F. Higgs	16,712
Prestige and Co., Ltd.	16,696
Perry and Co. (Bow), Ltd.	16,580
J. Grover and Son	16,432
W. Moss and Sons, Ltd.	16,290

Llandaff.—Accepted for the erection of a new infants' Council school at Llandaff for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff:—Stephen Shail, Llandaff, £3,818.

Maidstone.—For the conversion of the old borough police station into offices, for the Guardians:—

W. E. Blake, Ltd., London and Plymouth	£3,000
G. E. Wallis and Sons	2,382
Elmore and Son	2,295
Martin and Newman	2,267
Barden and Head	2,264
G. Pearce and Sons	2,248
Cox Bros.	2,250
R. Corben and Co.	2,138
W. T. Burrows*	2,007

Rest of Maidstone.
*Accepted.

Maidstone.—For erection of a confectionery factory in St. Peter's Street, for Messrs. Edward Sharp and Co. Messrs. Ruck and Smith, Architects:—

Elmore and Son	£6,986
Cox Bros.	6,450
Corben and Co.	6,399
Barden and Head	6,100
G. E. Wallis and Sons*	5,996

*Accepted.

Ogmore Vale.—Accepted erection of a new mixed Council School at Fronwen, Ogmore

Vale, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., Cardiff, County Architect:—W. A. Jones, Bridgend, £49.0 6s. 7d.

Ogmore Vale.—Accepted for the erection of a new girls' Council school for 300 at Aber, Ogmore Vale, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., M.S.A., County Architect, Cardiff:—W. A. Jones, Barry and Bridgend, £4,282 12s. 9d.

Ogmore Vale.—Accepted for the erection of a new junior Council school at Fronwen, Ogmore Vale, for the Glamorgan County Council. Mr. D. Pugh-Jones, M.S.A., F.S.I., County Architect, Cardiff:—W. A. Jones, Barry and Bridgend, £4,580 6s. 7d.

Pontcymmer.—Accepted for the erection of a retaining wall and levelling part of playground to the boys' Council school, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff:—W. A. Jones, Barry and Bridgend, £432.

Pleasley.—Recommended for acceptance for erection of an infant school, for the Mansfield Education Committee:—J. Greenwoods, £2,743

Pontypridd.—For the extension of their refuse destructor buildings at Treforest, for the Pontypridd Urban District Council. Mr. W. E. Lowe, Surveyor:—

Knox and Wells, Bangor Street, Cardiff	£1,700 0 0
H. Murray, The Common, Pontypridd	1,560 17 4
G. L. Morgan, Lan Wood, Pontypridd	1,337 13 9
Williams and James, Pontypridd	1,316 4 8
D. Davies and Sons, Trade Street, Cardiff	1,300 0 0
S. Shail, Station Road, Llandaff	1,299 0 0
D. Griffiths and Sons, Gelli-wastad Road, Pontypridd	1,286 12 0
W. H. Evans,* West Luton Place, Cardiff	1,244 0 0

* Accepted.

Stithney.—Accepted for erection of a Council school at Stithney, for the Cornwall Education Committee:—Jory, Connor Downs, £1,601.

Southend-on-Sea.—For alterations and additions to the London Road infants' Council School, for the Southend-on-Sea Education Committee. Messrs. Cabuche and Hayward, Architects, Hamlet Court Road, Westcliff.

Southend-on-Sea:—	
S. E. Moss	£3,991 18 0
C. W. Pavey	3,799 0 0
W. H. Sharpin, London	3,755 0 0
J. O. Flaxman	3,543 0 0
E. Leaney	3,539 12 6
H. E. Campkin	3,422 0 0
F. E. Woodhams	3,450 0 0
A. R. Whur	3,432 10 0
A. E. Symes, Stratford	3,407 0 0
Davey and Armitage	3,330 0 0
F. Davey	3,091 0 0
E. and B. H. Davey*	3,075 0 0
R. N. Marrable, Leytonstone Rest of Southend.	2,994 0 0

* Recommended for acceptance.

Tilbury (Essex).—For erection of a cookery, manual, and housewifery centre at Tilbury, Essex, for the Essex Education Committee. Mr. C. M. Shiner, A.R.I.B.A., Architect, 7, Adam Street, Adelphi, W.C. Quantities by Mr. G. Silvester, F.S.I., Adelphi, W.C.:—

A. H. Fryd	£3,387 15 0
Foster and Sons	3,379 0 0
W. Potter	3,280 0 0
Dowsing and Davis	3,220 0 0
H. J. Carter, Ltd.	3,194 0 0
J. Chessum and Sons	3,180 0 0
W. E. Davey	3,022 10 0
Brown Bros	3,017 0 0
C. Brown*	2,973 0 0
Bruty and Son	2,937 18 0

* Accepted.

COMING EVENTS.

Monday, July 1.
LONDON ASSOCIATION OF MASTER DECORATORS, 92, Queen Victoria Street, E.C.—Annual General Meeting, at the Holborn Restaurant.

Wednesday, July 3.
INSTITUTION OF MUNICIPAL ENGINEERS, 39, Victoria Street, S.W.—North-Eastern and Eastern Districts' Joint Meeting, Peterborough. Inspection of brickmaking at the works of Messrs. Eastwood and Co., Ltd., Fletton. Train from King's Cross, 10.35 a.m.

Tuesday, July 9.
MANCHESTER SOCIETY OF ARCHITECTS, 20, Cooper Street.—Visit to Messrs. Pilkington's Tile Works, Clifton Junction. Train Victoria Station, Manchester (Platform 13), at 5.43 p.m.

Architectural Works

A 36 page illustrated Catalogue of Publications for Architects, Surveyors, Engineers and Contractors.

Published by
TECHNICAL JOURNALS, Ltd.,
Caxton House, Westminster, S.W.

Sent Free on receipt of a Postcard.

BUYERS OF all descriptions of BUILDERS' OLD METALS.

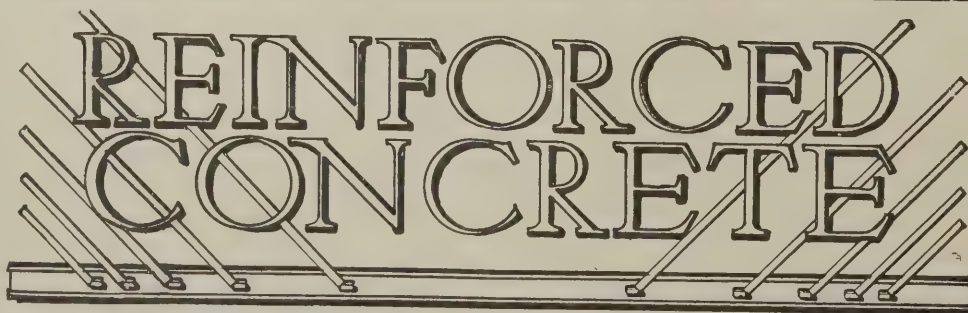
BEST PRICES GIVEN for

BRASS	BRONZE	COPPER
LEAD	SOLDER	TIN
	ZINC, etc.	

APPLY TO

FRY'S METAL FOUNDRY,
25-27, HOLLAND ST., BLACKFRIARS, S.E.

TELEPHONE HOP 3754.



WILLIAM MOSS & SONS, LTD.,
ENGINEERS AND CONTRACTORS,
QUEEN ANNE'S CHAMBERS, TOTHILL ST., WESTMINSTER, S.W.

THE SYSTEM WITH . .
RIGID SHEAR MEMBERS

Designs and
Estimates
Supplied Free



Telephone: VICTORIA 2609.
Telegrams: "GRANICRETE, LONDON."

LIVERPOOL: 19, WHITECHAPEL.

NATURAL ROCK ASPHALTE

(Compressed or Mastic).

For Horizontal and Vertical Damp Coursing.
For Flat Roofs, Basements and other Floors.

The French Asphalte Co., Ltd.

(ESTABLISHED 1871)

Supply only the best material from their own
mine of St. Jean de Maruejols, combined
with the best workmanship.

Complete satisfaction given to the Leading Architects.

Apply for Prices:—

5, Laurence Pountney Hill, Cannon Street, E.C.

PALMER'S TRAVELLING CRADLE

THE SAFEST SCAFFOLD EVER USED.

Enquiry Invited for Special or Difficult Staging.

SUSPENDED SCAFFOLDS OUR SPECIALITY

PALMER'S are also Manufacturers of

STEEL WIRE SCAFFOLD LASHINGS,

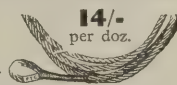
GUARANTEED SHEFFIELD CRUCIBLE STEEL.

(The Scaffold Cord of the Future.)

BEST for the SCAFFOLDER. INDISPENSABLE without him.

15ft. LASHINGS.

Stamped with
Your Initials
on our
Registered
Thimbles.



14/-
per doz.

Twice the
Life of any
other
Lashing.

USED ON ALL GOVERNMENT WORKS.

Scaffolding and Tackle of all kinds on Hire.

Palmer's Travelling Cradle and Scaffold Co.,

250, Westminster Bridge Road, London, S.E.

COATOSTONE LIQUID STONE

Neal's Patent.

For Interior or Exterior Work.

Applied as Paint on Plaster, Cement, Stone or
Woodwork, gives a perfect effect of Natural Stone.

NEALSTONE IMITATION STONE

for applying to brickwork
in plastic form.

For Interior or Exterior Work.

THE COATOSTONE DECORATION CO.,

77, Mortimer St., Regent St., W.

Tel. No. 14410 Cent. Teleg.: "Coatostone, London."

SEASONED ENGLISH OAK

JOINERY & WOOD CARVING

An immense stock of thoroughly dry and
well-seasoned English Oak is always kept
in stock—fit for immediate use—and
Estimates will be given for Panelling,
Doors, Staircases, and any description of
Joinery, from Architects' Drawings and
Specifications

JOHN P. WHITE & SONS LTD.

THE PYGHTLE WORKS, BEDFORD

and

134 NEW BOND STREET, W.

TERRA-COTTA

TILES

(ROOF AND FLOOR)
FAIENCE.

NOSTELL TILE WORKS, NR. WAKEFIELD.

Tel. Address—
WINN NOSTELL.

Tel. No.—
66 WAKEFIELD.

Representative—
FRANK TALBOT,
Walten, nr. Wakefield.

THE Perfect System of Heating.

Specialy suited for

PRIVATE HOUSES

OFFICES

SCHOOLS

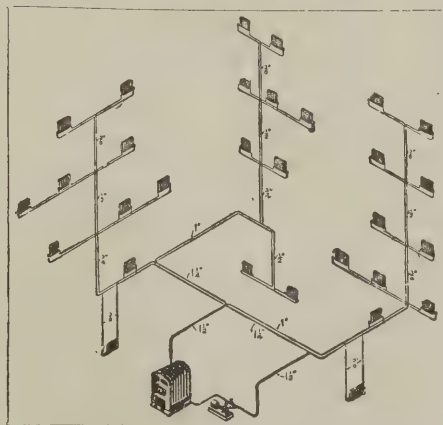
CHURCHES

HOSPITALS

HOTELS

WORKSHOPS

&c., &c.



ECONOMY.
SIMPLICITY.
LOW COST.
PERFECT ACTION.
NO PIPE TRENCHES.
NO TROUBLE.
NO ATTENTION.
BOILER FIXED ON
ANY FLOOR.

MESSRS. BENHAM & SONS, Ltd., have specially designed this system to meet the MODERN and UP-TO-DATE requirements of Architects and Builders.

The system is PERFECT IN ACTION, SIMPLE IN CONSTRUCTION and LOW IN COST, and is specially suitable for buildings where cutting away and making good is an objection to the installation of a heating apparatus.

VERY SMALL SUPPLY PIPES are used and all pipes can be run quite IRRESPECTIVE OF LEVELS. The BOILER CAN BE FIXED ON ANY FLOOR.

APPLY

SCHEMES AND ESTIMATES FREE.

BENHAM & SONS, Ltd.,

66, WIGMORE STREET,
LONDON, W.

Telephone: Paddington 321 (2 lines.)

Telegraphic Address: "Benham, London."

ELECTRICAL NOTES.

A New Vacuum Cleaner.

That we have by no means reached finality in vacuum cleaners is obvious to all, but improvements have been rapid during the last year or two. The general criticisms that have been levelled at these machines are that the apparatus are either too heavy to be moved about conveniently or that the light ones of the broom type are not powerful enough and necessitate carrying the dust bag about with the machine. A new type has now been introduced, which seems to have overcome these objections, in that the motor and dust reservoir are stationary, whilst the flexible tube can be moved about, and at the same time the motor and suction are powerful enough to do all that the larger patterns effect in the way of cleaning. The apparatus in question is known as the Wilfisk Vacuum Cleaner, and besides the points enumerated above it has several other advantages.

The dust container and the fan motor are contained in circular stamped steel cases, the latter above the former. The motor runs on an horizontal plane, and the spindle is fitted with two fans in tandem on its lower end, the blades being so arranged that the action of the bottom fan is increased by that of the upper fan, and a very strong pull is thereby achieved. The brush gear and lubrication are accessible by means of inspection covers in the case of the motor, which is also fitted with a switch and flexible wire with plug connection at both ends. The top of the case has a handle, and as the combined case measures 2 ft. high by 12½ in. diameter, and weighs only 35 lb., it can be carried about fairly easily.

The air which passes into the dust con-

tainer is filtered by means of a canvas screen, so as to prevent any dust from penetrating into the motor case. The container is emptied by turning two locking bolts and lifting away the whole of the top containing the working parts. The vacuum can be regulated by adjusting the exhaust parts in the case, and the motor can be cooled, if necessary, during use for lengthy periods by shutting the exhaust parts and opening the inspection covers, so that the air is taken through the motor case. A novel feature of the machine is that it can be employed for blowing as well as for suction, by inserting the flexible tube in one of the exhaust parts. This is useful for many purposes, such as blowing dust out of places which the nozzle cannot reach, airing linen, drying hair, blowing up a fire, etc. The machine includes an outfit of accessories, and is made for all standard voltages. The motor only consumes about 300 watts, say 1-3 of a unit. The Wilfisk cleaner has been put on the market by Gillespie and Beales, Amberley House, Norfolk Street, W.C.

Simplex Heating and Cooking Apparatus.

There will, apparently, be a boom in electric heating and cooking next season. Recent discussions at the Institution of Electrical Engineers have shown what is in the wind, and some papers read last week at the annual convention of Municipal Electrical Engineers at Harrogate have still further emphasised the fact. Manufacturers of these apparatus are busy making preparations, and one of the first to show that they are ready is Messrs. Simplex Conduits, Ltd., who have just issued a new and elaborate catalogue. The principle upon which the heating elements of their apparatus are constructed is high specific resistance wire of special manufac-

ture, wound on thin strips of mica, which are held together in strong but light incorrodible metal sheaths. This wire is not subject to oxidation, and possesses a very low temperature co-efficient. The elements are run at a fairly low temperature, because their construction gives considerable emissive surface per watt of electrical energy, hence they have a long life.

A useful set is the combination cooking outfit, consisting of a 6 in. hot-plate, two-pint aluminium kettle, and aluminium saucepan and frying pan, suitable for a small family. A polished metal oven may be added so as to increase the usefulness of the outfit. The hot-plate is fitted into an aperture at the bottom, and will cook chops and other things of a similar order. Larger hot plates and corresponding ovens will deal with joints. A series of electric boiling plates in 6, 8, and 10 in. sizes, with or without temperature regulation, are a useful novelty at low prices. A range of vessels of polished aluminium is supplied if required with these, to give the best results. Electric towel-dryers are also an innovation. These are in two patterns—hospital pattern, for fixing to floor, with three tiers, and residence pattern, portable. They take 600 watts each. Electric irons are listed in a variety of types and sizes, from 9s. upwards, including the special laundry iron with revolving connector already described in these notes. There are some very handsome designs of heaters in many types and designs, including special connectors for corridors, offices, theatres, etc., as well as hot cupboards and other utensils of all kinds. The attention given to design is very gratifying. It is one more proof that high utility does not necessarily imply a negation of taste. Those interested in the subject should not fail to write for a catalogue.

ELECTRIC LIGHT FITTINGS,

and all kinds of Architectural Metal Work, are made at our well-equipped and modern factory.

We maintain a permanent staff of expert designers and are prepared to submit special drawings to architects' requirements at short notice.

Comprehensive Catalogues sent on request.

Simplex Conduits, Ltd.

(Incorporating JESSON, BIRKETT & Co., Ltd.),

Garrison Lane, BIRMINGHAM.

MANUFACTURING ELECTRICAL ENGINEERS.
SOLE MAKERS OF THE SIMPLEX STEEL
CONDUIT SYSTEM OF ELECTRIC WIRING.
ELECTRICAL ACCESSORIES OF ALL KINDS.

FITTINGS to receive HOLOPHANE GLASSWARE a SPECIALITY.

Architectural Works

A 36 page Illustrated
Catalogue of Publications
for Architects, Surveyors,
Engineers, and Contractors

Published by
Technical Journals, Ltd.
Caxton House, Westminster, S.W.

Sent Free on receipt of a Postcard.

"PUDLO"

PATENTED AND REGISTERED.

FOR

Leaking Cisterns,
Damp Walls,
Flooded Basements.

ALSO

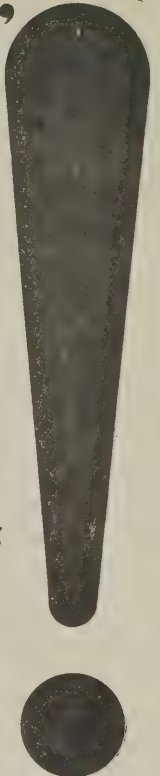
Waterproofs
Concrete.

Makes Cement Water-proof

Pudlo is a powder.
Sprinkle it over cement.
Add sand and water.
Render as is usual.

Made in England by

KERNER-GREENWOOD & Co., Ann's Place,
King's Lynn.



Final EXAMINATION for the R.I.B.A.

The Institute now requires as testimonies of study for the Final Examination at least four designs in answer to their bi-monthly problems. In working out these designs, which are mainly of a monumental character and have to be executed in shaded drawings, the LIVERPOOL SKETCH-BOOK will be found extremely useful. The designs there exhibited include solutions to many similar problems and are all shown in carefully shaded and rendered drawings.

The Journal of the R. I. B. A.:—"The second volume of the Liverpool Annual demands the serious attention of all interested in the development of English Architecture."

Some of the Contents, measured and shaded Drawings, etc. :—

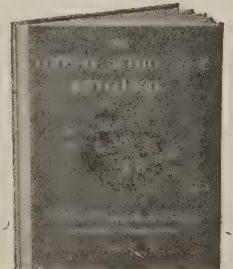
BLenheim PALACE. By Sir John Vanbrugh.
PALais DE JUSTICE, PARIS. By Duc.
ECOLE MILITAIRE, PARIS. By Gabriel.
THE APOTHECARIES HALL, LIVERPOOL.
By Cunningham and Holmes.

THE INLAND REVENUE OFFICES, LIVERPOOL.
TRINITY COLLEGE, DUBLIN.
By Sir William Chambers.
THE BANK OF ENGLAND, LIVERPOOL.
By Cockerell.

The volume also includes schemes for—

A Lofty Office Building.
A Monument to Nelson in St. Paul's Cathedral.
A National Monument at the Approach to a Riverside Town.
A Tomb to a Man of Letters.

A Town House.
A Car Shelter.
A Mausoleum.
A Church Tower.
Compositions of Classical Detail.



The Liverpool Architectural Sketch-Book.

ENLARGED VOLUME.

Price 5/- nett.

6d. extra will be charged for postage (inland) if remittance is not sent with order.

Orders should be sent to the Manager, Technical Journals, Ltd., Caxton House, Westminster, S.W.

Appointments Wanted.

A YOUNG Draughtsman (24) seeks work; well up in interior work, drawings, details, measuring up, etc.—A. J. Wilder, 17, Chester Road, Wanstead, Essex. 7143

ADVERTISER (28), with experience as Assistant Architect and Estate Clerk of Works, urgently desires offer of suitable appointment; excellent references.—Box 7117, ARCHITECTS' AND BUILDERS' JOURNAL Office.

ARCHITECT, going to Australia, is prepared to represent one or two firms for building specialities; commission and allowance for expenses required. Box 7159, ARCHITECTS' AND BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (21) desires engagement in Yorkshire; excellent draughtsman; design, working drawings, details, specifications, supervision, perspectives, surveying, levelling; excellent testimonials; provincial experience; moderate salary.—"Albania," 54, Wright Street, Hull. 7122

ARCHITECTURAL Draughtsman; 7½ years' experience; design, planning, construction, details, perspective, surveying, levelling, good tracer, etc.; good references; excellent testimonials; moderate salary.—Williams, 18, Plumstead Common Road, Plumstead, Kent. 7138

A.R.I.B.A., practising, desires post as manager, with possibility of partnership later, in Northern Counties; competent all round, especially domestic work.—Box 7109, ARCHITECTS' AND BUILDERS' JOURNAL Office.

BUILDER'S Clerk; bookkeeping (double entry); jobbing accounts and general office routine; plans, etc.; town or country; moderate salary.—Box 7114, ARCHITECTS' AND BUILDERS' JOURNAL Office.

BUILDER'S Estimator, etc., seeks appointment as manager to a jobbing business, with a turnover of about £2,500 per annum; thoroughly competent in alterations, decorations, and repairs of all kinds.—Reply, Box 7112, ARCHITECTS' AND BUILDERS' JOURNAL Office.

BUILDER'S son desires engagement; six years' architectural training; working drawings, details, specifications, quantities, surveys, assist with levelling; neat, accurate draughtsman; excellent testimonials.—Box 7136, ARCHITECTS' AND BUILDERS' JOURNAL.

CANADA.—Englishman going Western Canada in July, will accept agencies; highest references.—Communicate Box 7113, ARCHITECTS' AND BUILDERS' JOURNAL Office.

CARPENTER, practical, seeks permanency on estate factory or warehouse or as carpenter and caretaker; age 38; good references.—Box 7160, ARCHITECTS' AND BUILDERS' JOURNAL Office.

CONTRACTOR'S Foreman or Inspector, Home or abroad. Has had practical experience reinforced concrete, frame buildings, water, railway work. Keen, business, young, robust.—Advertiser, 34, Thornhill Houses, Thornhill Road, Barnsbury, London. 7141

DRAUGHTSMAN (23), church, domestic, public, art metal work, sketches, working drawings; 5½ years' good experience; disengaged; desires situation; good references.—M., 87, Greyhound Road, Tottenham, N. 7111

GENTLEMAN, well known in reinforced concrete circles and with good connection amongst architects and engineers, is open to an outside appointment with a good firm, can design and estimate if necessary, and carry out contracts expeditiously; ten years' experience.—Apply, Box 7157, ARCHITECTS' AND BUILDERS' JOURNAL.

Official Appointments Vacant.

ASSISTANT SANITARY INSPECTOR (Aberdare, July 1).—For the Aberdare U.D.C. Commencing salary £90 per annum. Applications marked "Assistant Inspector," stating age, qualifications, with three recent testimonials, to Mr. Thomas Phillips, Clerk, Town Hall, Aberdare.

ELECTRICAL ENGINEER (West Ham, June 28).—For the West Ham Town Council. Candidates must have had experience in important electricity undertakings, and knowledge of commercial management of electricity supply. Salary £550 per annum, rising to £700. Application forms and other particulars may be obtained from Mr. F. E. Hilleary, Town Clerk, Town Hall, West Ham.

HIGHWAYS FOREMAN (London, S.E., July 1).—For the Deptford Borough Council. Applicants must be qualified pavior masons, and had previous experiment under local authority of all classes of highway work. Wages £2 2s. per week. Applications on forms to be obtained from Mr. V. Orchard, Town Clerk, Town Hall, New Cross Road, S.E., must be accompanied by copies of three testimonials, and sent to the Town Clerk.

Appointments Vacant.

ADMINISTRATIVE COUNTY OF LONDON.

The London County Council invites applications for the position of visiting teacher of quantity surveying at the School of Building, Brixton, for one afternoon a week, at a fee of 15s.

Applicants must be in practice as quantity surveyors and possess at least the professional Associateship.

Applications must be on the official forms to be obtained, with particulars of the appointment, by sending a stamped addressed foolscap envelope to the Education Officer, London County Council, Education Offices, Victoria Embankment, W.C., to whom they must be returned by Monday, July 1, 1912. Every communication must be marked T.1 on the envelope.

Canvassing either directly or indirectly will be held to be a disqualification for appointment.

LAURENCE GOMME,

Clerk of the London County Council.

Education Offices,

Victoria Embankment, W.C.

June 19, 1912.

7155

CEMENT Manufacture.—Wanted for India first-class experienced mechanical engineer, well acquainted with Portland Cement machinery with experience of rotary kiln plants; able to superintend the manufacture of cement during the absence of works manager.—Address "Z. A. 664," Deacon's, Leadenhall-street, E.C. 7149

CONSTRUCTIONAL DRAUGHTSMAN.—Wanted in Engineer's Office in the City, two Draughtsmen for Building Construction Steel and Ferro-Concrete Work. Must be careful and neat workers and writers. Address, stating experience and salary required, to Box 114, at Horn-castles, Cheapside, E.C. 7152

REINFORCED Concrete Draughtsman required by London Specialist firm; experienced and reliable; state age and salary.—Apply Box 7131, ARCHITECTS' AND BUILDERS' JOURNAL Office.

WANTED.—Working Foreman, reinforced concrete; to take charge of work at Immingham Docks.—Apply S. and J. Smethurst, Ltd., Contractors, Rochdale Road, Oldham. 7156

Miscellaneous.

ARCHITECT'S LIBRARY for sale; latest technical works; reinforced concrete; Bond's works, etc., list for stamp.—Harvey, 1, Park Parade, Palmer's Green. 7104

AUSTRALIA.—Englishman shortly going to building towns in Australia, will accept agencies. Good connection in N.S.W. Excellent references.—Write Box 7132, ARCHITECTS' AND BUILDERS' JOURNAL.

BOOKS.—Books on Building Trades, Engineering, Educational, Literary, Technical, and all other subjects; second-hand at half prices; new at 25 per cent. discount; catalogue free; state wants; books sent on approval; books bought; best prices given.—W. and G. Foyle, 133, Charing Cross Road, London, W.C.

FOR Sale.—Portable track with curves, switches, and tipping wagons; also Ransome concrete mixer.—Full particulars from Ezra Dunham, Contractor, St. Albans. 7151

FOR Sale, fine Oak Balustrading, excellent condition, 28 ft. long, in 4 lengths, 3 ft. 3 in. high; photo supplied.—G. S., 26, Lorn Road, Brixton, S.W. 7004

POLING Boards, selected length and thicknesses, best quality and full measure, also scaffold boards, putlogs, scantlings, deals, batten and boards; lowest wharf prices.—C. H. Glover and Co., Ltd., Importers, Hatcham Saw Mills, Old Kent Road, S.E.

SECOND-HAND Optical Mart.

For the Purchase and Sale of
LEVELS, THEODOLITES, DRAWING INSTRS.—Clarkson's, 338, High Holborn, London, W.C. (Opposite Gray's Inn Road.)

Typing.

SPECIFICATIONS, reports, etc., penny per folio. Done at once. Ring me up at 2673 Victoria. Perfect accuracy and neatness guaranteed. Duplicating, Translations.—Blythe, 72, Victoria Street, S.W. 7153

TYPEWRITING; architects' and builders' specifications and reports a speciality; Testimonials copied; Bound in stiff covers; prompt, cheap, and accurate.—Address, "Typist," Typewriting Office, 65, Marsham Street, Westminster. 7161

Businesses for Sale.

ARCHITECT (London) leaving England, wishes to sell small varied practice; suit beginner or amalgamate.—Box 7158, ARCHITECTS' AND BUILDERS' JOURNAL Office.

TIMBERS, Coal, and General Builders; charming Surrey; returns £5,000 to £6,000 a year; same hands 10 years; owner will stay to initiate purchaser; price £2,000.—Full particulars of Valentine and Foster, 3, Bloomsbury Court (next Museum Tube), W.C. 7145

Contracts Open.

TO CONTRACTORS.

EAST RIDING OF YORKSHIRE COUNTY COUNCIL.
RECONSTRUCTION OF HULL BRIDGE, NEAR BEVERLEY.

The County Council of the East Riding of Yorkshire are prepared to receive TENDERS for the REMOVAL of the existing BRIDGE across the River Hull, near Beverley, and the CONSTRUCTION of a new OPENING BRIDGE on the site of the existing bridge, together with the CONSTRUCTION and subsequent REMOVAL of a TEMPORARY BRIDGE adjacent thereto. The Contract will include the provision of the machinery for working the bridge, the machinery house, and other continuing works.

The Contract, drawings, and specification may be seen at the Offices or the Engineers, Sir JOHN WOLFE BARRY and PARTNERS, Dartmouth House, 2, Queen Anne's Gate, Westminster, S.W., on and after MONDAY, JUNE 10, between the hours of ELEVEN and FOUR, and copies of the drawings and specification, together with a schedule of quantities and form of Tender, may be obtained there upon payment of ten guineas.

This sum will be repaid by the Council upon receipt of a bona-fide Tender, accompanied by the specification and drawings, which are to be returned with the Tender.

Tenders, endorsed "Tender for Hull Bridge," must be delivered under seal at the office of the CLERK to the EAST RIDING COUNTY COUNCIL, County Hall, Beverley, on or before NOON on FRIDAY, JULY 5.

The lowest Tender will not necessarily be accepted.

JOHN BICKERSTETH,

Clerk of the County Council.

County Hall,
Beverley,

May 23, 1912.

TO BUILDERS AND CONTRACTORS.

TENDERS are INVITED for the following:
(1) LAYING DOWN MAIN ROADS and SEWERS for a housing scheme near Cardiff, comprising in all about 500 houses.

(2) THE ERECTION and COMPLETION of about 500 WORKMEN'S HOUSES, part semi-detached, part in blocks of six.

Builders desirous of tendering for either one or both contracts are asked to communicate immediately with the undersigned, from whom all particulars can be obtained.

W. BEDDOE REES,

Architect.

3, Dumfries Place,

Cardiff.

BOROUGH OF HOVE.

NEW SEWERS.

TENDERS are INVITED for CONSTRUCTING new SEWERS in Queen's Gardens, Grand Avenue, The Drive, Holland Road, and Davigdor Road, within the Borough.

Plans, specification, and form of contract may be seen, and bills of quantities and form of tender obtained, at the Office of the Borough Surveyor, Mr. Hugh Hamilton Scott, on payment of two guineas, which sum will be returned on the receipt of a bona-fide tender.

The lowest or any tender not necessarily accepted.

Tenders, on the forms provided, endorsed "Tender for New Sewers," addressed to the undersigned, will be received up to SIX o'clock on WEDNESDAY, the 3rd JULY next.

Town Hall, Hove.

7th June, 1912.

H. ENDACOTT,

Town Clerk.

TO BUILDERS.

The Commissioners of H.M. Works and Public Buildings are prepared to receive TENDERS for the EXTENSION of BEDFORD POST OFFICE.

Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the POSTMASTER at Bedford Post Office.

Bills of quantities and forms of tenders may be obtained at H.M. OFFICE of WORKS, Storey's Gate, London, S.W., on payment of one guinea. The sums so paid will be returned to those persons who send in tenders in conformity with the conditions specified below.

The Commissioners do not bind themselves to accept the lowest or any tender.

Tenders must be delivered before ELEVEN o'clock a.m. on FRIDAY, the 5th JULY, 1912, addressed to the SECRETARY, H.M. Office of Works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Bedford Post Office Extension."

H.M. Office of Works, etc.

June 11, 1912.

Competitions Open.

TO ARCHITECTS COMPETING.
SCHEMES & ESTIMATES FOR ENGINEERING WORK

(Lighting, Heating, Ventilation, and Sanitation), and Architectural Metal Work, supplied free of charge of STRODE & CO., 48, Osnaburgh Street, London, N.W.

Partnership.

YOUNG ARCHITECT, thoroughly qualified; for five years with leading Domestic Architect, desires partnership, or appointment with view to same in busy Provincial Office.—Box 7150, ARCHITECTS' AND BUILDERS' JOURNAL Office.

Property to Let or For Sale.

By order of Executors.
BEXHILL-ON-SEA.

Eligible Freehold BUILDING LAND, situate in one of the highest and healthiest positions in this charming seaside resort, with frontages to boulevard roads, sewerage and lighted, and commanding good views over the Channel.

Ripe for immediate profitable development.

WEATHERALL AND GREEN will SELL by AUCTION, at the Mart, London, E.C., on Monday, July 8, at 2 o'clock, in one lot, the FREEHOLD BUILDING LAND, having frontages of 450 feet to the Buckhurst Road, and 170 feet to the Upper Sea Road, and containing an area of nearly 3½ acres; situate at an altitude of from 100 to 125 feet above Ordnance datum, and being midway between the L.B. and S.C.Ry. Station and Bexhill Old Town.

Particulars, plan, and conditions of sale may be obtained of Messrs. Phillips and Cheesman, solicitors, 23, Havelock Road, Hastings; and of the Auctioneers, 22, Chancery Lane, London. 7133

To Ironmongers, Builders, Architects, Private Buyers and others.

In Liquidation, re Alexander Ritchie and Co., Limited, 12 and 13, Upper Thames Street, E.C.

Important three days' sale of the high-class stock-in-trade of BUILDERS, MERCHANTS, AND IRONFOUNDERS, including Baths, Lavatories, Sanitary goods, Tiled Registers, Interiors, Dog Stoves, Mantel Registers, wood and other chimney pieces, gas fires, tiled panels, surrounds and hearths, kerbs, and furnishings, kitcheners, heating stoves, fire clay goods, a 5 ft. steam carving table, 9 ft. hotel range, a 3 ft. 6 in. tiled grilling stove, Brass foundry, Rain water goods, general light castings, hot-water pipes, etc.

The entire equipment of the well-fitted offices, fireproof safes, typewriters, etc., which will be sold by auction on the premises as above, on Monday, July 8, 1912, and the two following days at 12 o'clock precisely by **MESSRS. S. E. HAWARD and C. O. BALLARD.**

On view Thursday, July 4, and following days. Catalogues may be obtained from the Receiver, T. Dudley Cocke, Esq. (Messrs. G. N. Read, Son and Co.), Chartered Accountants, of 44, Gresham Street, E.C., at the place of sale, of Mr. S. E. Haward, Engineers and Metal Trade's Valuer, and Mr. G. O. Ballard, Auctioneer, of 369, Birkbeck Bank Chambers, Holborn, W.C. 7163

TO CEMENT MANUFACTURERS, BUILDERS, AND OTHERS.

WAREHAM, DORSET, near to the Town with good Roads, close to River, and an arm of Poole Harbour, Messrs.

JOSHUA BAKER, COOKE & STANDEN will SELL BY AUCTION on THURSDAY, JULY 4, 1912, at the DOLPHIN HOTEL, SOUTHAMPTON, at 4 o'clock precisely, IN ONE LOT, the FREEHOLD MANUFACTURING PROPERTY with PLANT and EFFECTS known as the WAREHAM CEMENT WORKS, having Foreman's House, 6 Kilns, Mill and Engine Houses, Cement Stores, Drying Shed, Smithy, etc., about 2 acres in extent, fitted with 2 powerful HORNSBY GAS ENGINES WITH SUCTION GAS PLANTS, Pugmill, 2 Grinding Mills, Tube Mill, and a large quantity of other useful Plant and necessary Effects, also 60 YEARS' LEASE OF QUARRY in the Purbeck Hills for working Marl and Limestone at £60 per annum, and very moderate Royalties. To be sold with possession on completion. May be viewed on application to Messrs. Newbery and Son, Engineers, Wareham.

For particulars, with Conditions of Sale, Apply Messrs. Robinson, Wilkins, and Thacker, Solicitors, 58, Russell Square, London, W.C.; at the Red Lion Hotel, Wareham; the Antelope Hotel, Poole; the Dolphin Hotel, Southampton; or of the Auctioneers, 11 and 13, Southampton Row, London, W.C., or at Kilburn, N.W., and Barnet, Herts. 7148

Educational Announcements.

R.I.B.A. EXAMINATIONS.

Special personal system of preparation, by correspondence or private tuition.—Bond and Batley, A. G. Bond, B.A., A.R.I.B.A., and Claude Batley, A.R.I.B.A., 115, Gower Street, W.C. Tel. 8705 Central.

ARCHITECTURAL TUITION.

For the R.I.B.A. and S.A. Examinations, by correspondence or in studio; 23 years' successful experience.

G. A. T. MIDDLETON,
19, Craven Street, Strand, W.C.
Tel. 12842, Central.

R.I.B.A. AND SURVEYORS' INSTITUTION EXAMINATIONS.

Preparation by

**HOBDAY & VENNING,
5, BEDFORD ROW, LONDON, W.C.**

In the Surveyor's Institution examination of March last 89 per cent. of our candidates were successful. Every candidate who attended a lecture course passed, thus justifying our claim that there are no sounder courses of preparation to be obtained than those conducted by us.

Full particulars of courses and fees on application.

Telephone: Holborn 5653.

SANITARY INSPECTORS' EXAMINATIONS.
A CERTIFIED INSPECTOR AND ASSOCIATE ROYAL SANITARY INSTITUTE prepares candidates by correspondence. System highly successful. All candidates should possess "The Study of Sanitary Law" (2nd edition), 180 pages, 2/6; 200 Viva Voce Questions, 1/- Prospectus, testimonials.—E. G. Holmes, 5, Park Avenue, Ilford.

COURSES OF PREPARATION.

In Class, by Correspondence, or in Office, for the Examinations of:—

THE SURVEYORS' INSTITUTION,
THE ROYAL INST. OF BRIT. ARCHITECTS,
and THE SOCIETY OF ARCHITECTS.

On a complete practical, and highly Successful Method, by
MR. JAMES NEILL, F.S.I., Etc.,
Architect and Surveyor, Standard Buildings, Leeds. (Tel. 192.)

Note.—Before deciding upon any system of tuition, an intending candidate is invited to communicate with Mr. Neill (who, in addition to many other qualifications, is a Medallist, Honoursman, Prizeman, and Head of the Department of Building at the Leeds Technical School).

Pupils' latest Successes in the Surveyors' Inst. Exams. include: The Building Prize (bracketed) for Special Excellence in the Building Division. The nine months' Courses are now commencing.

CORRESPONDENCE TUITION for Examinations of the Royal Inst. of British Architects, Society of Architects, etc. Special courses of preparation for Preliminary Examination. New method of tuition for Intermediate and Finals. Write for particulars. Courses also for Surveyors' Inst., A.M.I.O.E., etc. Examination Aids, 1s. each subject.—**Penningtons** (Est. 1878), University Tutors, 254, Oxford Road, Manchester.

**PRACTICAL DESIGNING OF—
STEEL CONSTRUCTIONAL WORK, or
REINFORCED CONCRETE STRUCTURES,**

taught by Correspondence, individually or in classes. Write for Prospectus C., Embankment Engineering Institute, 64, Victoria Street, London, S.W.

ARCHITECTURAL EXAMINATIONS.

Preparation by Correspondence or personally, for R.I.B.A., S.A., and other exams. Booklet free. H. Hodgson, A.R.I.B.A., M.S.A., Architect, 5, Mannville, Bradford.

Telegrams: (Est. 1883.) Telephones:

"Dividore, London." **LONDON** Holborn 1011.
London Wall 1874

DRAWING & TRACING OFFICE,

Head Office—

98, Gray's Inn Road, W.C.
(adjoining Holborn Town Hall).

City Branch, 48, London Wall, E.C.
(opposite Salisbury House),

For the PROMPT and EFFICIENT execution of all work usually required by the PROFESSION, such as

**WORKING DRAWINGS,
COMPETITION DRAWINGS,
PERSPECTIVES, TRACINGS,
PHOTO-COPIES** (or Sun Prints) all kinds, including TRUE SCALE, on any material.

QUANTITIES, SPECIFICATIONS, LITHOGRAPHED.

MODELS for Exhibitions or Law Cases.

Patents.

PATENT for Sale, Fireproof Partition.—Apply, Box 6997, ARCHITECTS' AND BUILDERS' JOURNAL Office.

Competent Help

can be obtained quickly through an announcement in the "Appointments Vacant" column of "The Architects' & Builders' Journal."

3 LINES 1s. 6d.

A trial will convince you.

TECHNICAL JOURNALS, LTD.,

Caxton House, Westminster.

Too Late for Classification.

TARIFF FOR SMALL ADVERTISEMENTS.

Box numbers will be allotted to Advertisers free of charge, and replies addressed to a Box Number can be forwarded to the Advertiser per post upon request. Rolls or parcels of drawings in reply to advertisements are not accepted.

PROPERTY TO LET OR FOR SALE:

Four lines or under ... 3s. 0d.
For every line after ... 9d.

CONTRACTS OPEN:

Four lines or under ... 3s. 0d.
For every line after ... 9d.

LEGAL NOTICES:

Four lines or under ... 3s. 0d.
For every line after ... 9d.

COMPETITIONS OPEN:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

SITUATIONS WANTED:

Four lines or under ... 1s. 6d.
For every line after ... 6d.
Three Insertions ... 3s. 0d.

SITUATIONS VACANT:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

MISCELLANEOUS:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

PARTNERSHIPS:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

EDUCATIONAL:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

DRAWINGS AND TRACINGS:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

BUSINESSES FOR SALE OR WANTED:

Three lines or under ... 1s. 6d.
For every line after ... 6d.

The above prices are arranged for prepayment. Average seven words to line.
Advertisements for the above can be received up till Mid-day on Monday, at Caxton House, Westminster, S.W.

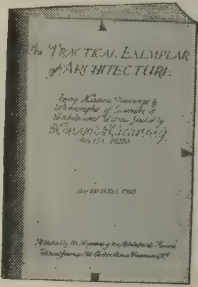
TECHNICAL JOURNALS' PUBLICATIONS

The Practical Exemplar of Architecture.

Selected by MERVYN E. MACARTNEY, B.A., F.S.A., F.R.I.B.A.

The scheme of the EXEMPLAR is to give an absolute and correct reproduction of fine details from the old and new Masterpieces of Architectural Design and Construction by means of Photographs and Measured Drawings. Each series (issued in a Portfolio) forms a unique collection of ancient and modern work, ready for immediate use and adaptation.

Series I. (1907), 120 Plates and Portfolio	...	15/-	each
Series II. (1909), 112 " 8 pp. descriptive Notes, and Portfolio	...	15/-	Nett,
Series III. (1910), 112 " " " " Annotated	...		post free
Index, and Portfolio	12/6		(Inland).

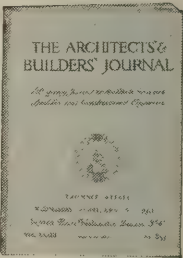


The Architects' and Builders' Journal.

"THE ARCHITECTS' AND BUILDERS' JOURNAL" is a publication which, while giving due attention to the higher aspects of Architecture, deals particularly with the more practical side of the art. Informative articles, by acknowledged experts, upon all points of construction are standing features of the Journal; and the very latest news of building trade activity is given week by week. All subscribers are entitled to the services of specially retained experts whenever confronted by a difficulty.

"DETAILS, OLD AND NEW," showing measured drawings and photographs of the elevations of noteworthy work, are a regular feature of each weekly issue. This valuable series commenced March 22, 1911.

Every Wednesday, Price 2d. Annual Post Free Subscription, 10/10; Canada, 13/-; elsewhere abroad, 19/6.



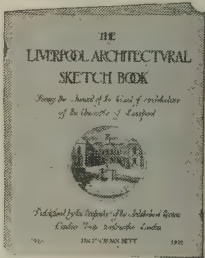
The Liverpool Architectural Sketch Book.

Being the Annual of the School of Architecture of the University of Liverpool. The Liverpool Architectural Sketch Book, comprising some 112 illustrations, affords striking evidence of the forward movement in Architectural Education. The drawings are skilfully executed, and have been fully reproduced on heavy art paper, in a handsome 4to volume.

Vol. I. 1910. Price 2/6 nett.

Vol. II. 1911. New and Enlarged Number. Price 5/- nett.

The Volumes will be sent Post Free (Inland) if remittance accompanies the order.



Recent English Domestic Architecture.

Edited by MERVYN E. MACARTNEY, B.A., F.S.A., F.R.I.B.A.

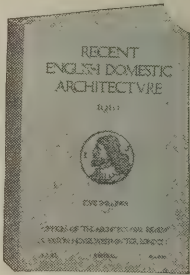
English Domestic Work is of acknowledged supremacy in the domain of Architecture. These Special Issues give a magnificent collection of the work of the best architects of the day, and are of the greatest value, not only to architects and builders, but also to those having estates to develop, and others who are interested in house-building.

1908. Vol. I. Out of print.

1909, 1910. Vols. II. and III. Price 7/6 each nett.

1911. Vol. IV. Price 5/- nett.

The Volumes will be sent Post Free (Inland) if remittance accompanies the order, otherwise postage will be charged.

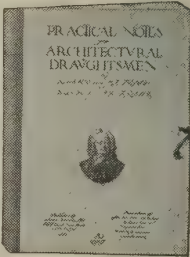


Practical Notes for Architectural Draughtsmen.

By A. W. S. CROSS, M.A., F.R.I.B.A., AND A. E. MUNBY, M.A., A.R.I.B.A.

Gives in most convenient form for use on the drawing-board examples with concise rules, explanations, and dimensions for preparing Designs, Perspectives, and Working Drawings for Classical Architecture with rapidity and precision. It contains a mass of valuable information with carefully drawn examples. How to draw "The Orders" correctly with the smallest possible amount of study and work is shown by the invaluable drawings and data given in this publication.

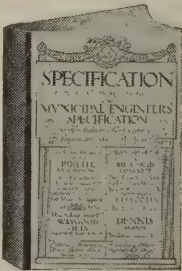
Price 15/- nett, Post Free (Inland), including Portfolio.



Specification :

FOR ARCHITECTS, SURVEYORS, AND ENGINEERS, WHEN SPECIFYING. Among the Important Special Contributions appearing in this Volume are the following :—Cinematograph Theatres, Notes on Motor Garages, Glossary of Technical Terms, Half-Timber Construction, Methods of Illumination (Acetylene Gas, Coal Gas, Oil, Petrol Gas, etc.), Working Drawings of some Important Recent Buildings. The work is the "Standard Encyclopædia of Technical Information" on all subjects which arise when specifications are being prepared.

No. 14, 1911-12. Price 3/6 nett, postage (Inland) 6d. extra.
Over 500 pages, 13 in. by 9 in., strongly bound.



Orders should be sent to The Manager, TECHNICAL JOURNALS, Ltd.,
Caxton House, Westminster, S.W.

Alphabetical Index to Advertisers.

	PAGE		PAGE		PAGE		PAGE
Acetylene Publicity, Ltd.....	—	Carter, Alfred, and Co.....	xxi	Kaye, J., and Sons, Ltd.....	xxiii	Siegwart Fireproof Floor Co. ...	x
A. Engraving Co., Ltd.....	xxiii	Carter and Co., Ltd.....	—	Kent, G. B., and Sons, Ltd.....	—	Simplex Concrete Piles, Ltd.....	—
African Architect, The.....	xxi	Caxton Publishing Co., Ltd.....	—	Kerner-Greenwood and Co.	xvii	Simplex Conduits, Ltd.....	xvi
Adams, Robert.....	xiii	Chance Bros., and Co., Ltd.....	vi	King, J. A.....	—	Smith Major and Stevens, Ltd.....	—
Anderson, D., and Son, Ltd.....	—	Chancellor, C., and Co.....	viii	Kleine Patent Flooring Syndicate	xiv	Smith, W. H., and Son.....	iii
Supp.	23	Claridge's Patent Asphalte Co.,	—	Lamp Pump Syndicate, Ltd.....	—	Somerville, D. G., and Co.....	viii
Argus Printing Co., Ltd.....	—	Ltd.....	vi	Lee, Alexr. G.....	x	Speaker, G. R., and Co.....	ii
Armoured Tubular Flooring Co.,	—	Clark, R. Ingham, and Co. Ltd.....	—	Leeds Fireclay Co., Ltd.....	xxiv	Stanley, W. F., and Co., Ltd.....	xvi
Ltd.....	—	Coatstone Decoration Co.....	xv	Leyland, J. H.....	xxi	Supp.	24
Arnold, Edward.....	—	Coignet, Edmond, Ltd.....	—	London Drawing & Tracing Office	xxi	Steffens' Stains.....	vi
Artificers' Guild, The, Ltd. Supp.	27	Colledge and Bridgen.....	vi	Longmans, Green, and Co.....	—	Stiff, J., and Sons.....	—
Art Metal Construction, Roneo,	—	Cowell, J. G.....	xxi	Macfarlane, W., and Co.....	xiii	Stothert and Pitt, Ltd.....	xxvi
Ltd.....	—	Crosby Lockwood and Son Supp.	24	"Mack" Fireproofing Co.....	—	Stuart's Granolithic Co., Ltd.....	—
Associated Portland Cement	—	Dawnay, A. D., and Sons, Ltd.....	xiv	Martyn, H. H., and Co., Ltd.....	vi & Supp.	Summerscales, Ltd.....	xxi
Manufacturers, Ltd.....	ix	Deutsche Eternit Gesellschaft ...	xii	—	10	Sumner, R., and Co., Ltd.....	viii
Barrett Manufacturing Co., Ltd.....	—	Douglas Granite Co., Ltd.....	—	Mather & Platt, Ltd.....	—	Tann, John.....	xxv
Bassant, H., and Co.....	xii	Doulton and Co., Ltd.....	ii	Mellowes and Co., Ltd.....	—	Tanner, John, and Son.....	xxvii
Batsford, B. T.....	Supp. 26	Drew-Bear, Pearks and Co.....	xi	Messenger and Co., Ltd.....	xxiii	Technical Journals Ltd, ii, xiv, xvii,	—
Bayliss, Jones and Bayliss.....	—	Dunkerley, C. C., and Co.....	—	Minton, Hollins, and Co.....	—	xx, xxii	—
Beacon Light (Valveless) Gas	—	Easton Lift Co., Ltd.....	vi	Modernia Tiles.....	—	"The" Lift and Hoist Co.....	xxi
Generator.....	v & Supp. 27	Emdeca Metal Decoration Co., Ltd.	Supp. 9	Moss, Wm., and Sons, Ltd.....	xiv	The Patent Rapid Scaffold Tie	—
Bellman, Ivey, and Carter, Ltd.....	vi	Ewart and Son, Ltd.....	—	Norton and Gregory, Ltd.....	v	Co., Ltd.....	—
Benham and Sons, Ltd. xv. &	Supp. 19	Expanded Metal Co., Ltd.....	iv	Nostell Brick Co.....	xv	Todd, H., and Co.....	—
Blakeley, E. F., and Co.....	vi	Farrer, William E.....	xv	Otis Elevator Co.....	xxvi	Tredegar and Co.....	v
Bratt, Colbran and Co.....	Supp. 27	French Asphalte Co., Ltd.....	xv	Oliver, Wm., and Sons, Ltd.....	ix	Trussed Concrete Steel Co.....	vii
Brilliant Sign Co., Ltd.....	—	Fry's Metal Foundry.....	xiv	Ozonair, Ltd.....	xix	Vigers Bros.....	xvi
British Ceresit Waterproofing	—	Gas Light and Coke Co.....	xxii	Palmer's Travelling Cradle Co....	xv	Vulcanite, Ltd.....	viii
Co., Ltd.....	viii	Gaspary, Dr., and Co.....	xxi	Parry, Blake and Parry.....	—	Wales, Dove, and Co., Ltd.....	—
British Commercial Gas.....	xxii	Gibson, A. L., and Co.....	—	Parsons, T., and Sons.....	xxiv	Wall Paper Manufacturers, Ltd.....	xxvi
British Dolomitic Co., Ltd.....	—	Hardtmuth, L. and C.....	xix	Peirson and Co.....	xxiii	Walton, Gooddy and Cripps, Ltd.....	xxi
British Luxfer Prism Syndicate	—	Haworth, Alfred, and Co., Ltd.	Supp. 23	Peters, C. A., Ltd.....	vi	Waygood, R., and Co., Ltd.....	—
British Reinforced Concrete En-	—	Holloway Bros. (London), Ltd.....	v	Pilkington Bros., Ltd.....	—	Western Electric Co., Ltd.....	—
gineering Co., Ltd.....	xv	Homan and Rodgers, Manchester	—	Pilkington and Co.....	xxi	White, John P.....	xv
British Stamped Metal Ceiling Co.	Supp. 9	Homan and Rodgers, London ...	—	Pinchin, Johnson and Co., Ltd....	—	Whitehead, A.....	xxiv
British Uraltite Co. (1908), Ltd.....	—	Hopton Wood Stone Firms, Ltd	—	Pollard, E., and Co.....	Supp. 13	Wilson Rolling Shutter Co., Ltd.	Supp. 20
British Vacuum Cleaner Co., Ltd.	—	Horrell and Bowman.....	—	Ransome ver Mehr Machinery Co.	x	Willcox, W. H., and Co., Ltd.....	iii
Broom and Wade, Ltd.....	xxv	Indented Bar and Concrete En-	—	Rea Metal Casements, Ltd.....	xiii	Willesden Paper and Canvas	—
Burn Bros.....	iii	gineering Co.....	—	Ringborg, J.....	—	Works, Ltd.....	xii
Callender, G. M., and Co., Ltd.....	xxiv	International Correspondence	—	Roneo, Ltd.....	xiii	Wouldham Cement Co., Ltd.....	xxi
Calmon, Asbestos and Rubber	—	Schools.....	—	"Ronuk" Ltd.....	14-15	Wright, E. G.....	iii
Works, Ltd.....	—	Jacks, Wm., and Co. xxiii & Supp.	16	Ruberoid Co., Ltd.....	20	Yale and Towne.....	xi
Canons Park Estate Co., Ltd.....	—	Jones, Fredk., and Co., Ltd.....	iii	Sage, Fred. and Co., Ltd.....	—	Young and Marten, Ltd.....	xxii
Carron Company.....	—			St. Pancras Ironwork Co., Ltd.	—		
				Shorland, E. H., and Bros., Ltd....	xiii		

For Appointments (Wanted and Vacant), Competitions Open, Drawings, Tracings, etc., Educational, Legal Notices, Miscellaneous, Property and Land Sales—See pages xviii and xix.

Telegrams: Enriching London

Telephone: 1845, 1846, 1847, 1848

highest quality London

PORTLAND CEMENT.

quick medium or slow setting.

LION WORKS GRAYS ESTABLISHED 1855

OUTPUT 3,000 TONS WEEKLY

35 GREAT ST HELENS E.C.

PILKINGTON & CO.

(Established 1838.)

DEPTFORD WHARF,

190 and 192, CREEK ROAD, DEPTFORD, S.E.

Telephone No. 1102 New Cross (2 lines).

Registered Trade Mark

Polonceau Asphalte

PATENT ASPHALTE AND FELT ROOFING

ACID-RESISTING ASPHALTE.

LIMMER ASPHALTE AND

SEYSSSEL ASPHALTE (Direct from the Mines).

THATCHING AND REED LAYING.

J. G. COWELL, SOHAM.

MARBLE.

WALTON, GOODDY & CRIPPS, LTD.

Eagle Wharf Rd., London, N.

Supply every description of

MARBLE WORK.

T'phone 618 North. T'grams "Gooddy, London."

THE SOUTH AFRICAN MASTER BUILDERS' FEDERATION JOURNAL.

(The Official Organ of the S.A. Master Builders Federation.)

Price 6d., Published Monthly.

THE AFRICAN ARCHITECT.

The Journal of the Institutes of S.A. Architects

Price 1/-, Published Monthly.

The only Building and Architectural papers published in South Africa.

Advertisement Rates and Specimen Copies can be obtained upon application on Business Stationery, to THE LONDON OFFICE, King's Chambers, Portugal Street, Kingsway, W.C.

ROOFING SLATES

Velinheli Penrhyn and Westmoreland,

SLATE SLAB GOODS

Both Plain and Enamelled.

ALFRED CARTER & CO., LIVERPOOL.

LAUNDRY

and Cooking Engineers.

SUMMERSCALES LIMITED

PHOENIX HOUSE, DACRE ST., WORKS: WESTMINSTER, S.W.

KEIGHLEY.

For Architects, Builders, and Engineers.

TRUE TO SCALE.

BLACK LINE PRINTS.

Permanent. Done on any Paper or Cloth.

W. F. STANLEY & CO., LTD.,

13, Railway Approach, London Bridge.

Tel.: 871 Hop. Telegrams: "TRIBRACH, LONDON.

Price List and Samples free on application.

"THE" LIFT & HOIST CO.,

Sole Makers of

"PREMIER" LIFTS, and

"Premier" Folding Partitions,

Premier Ironworks,

DEPTFORD, S.E.

J.H. LEYLAND OF WEAVER MANCHESTER

SPECIALIST LEAD GLAZING

ALL MACHINES AND MOULDS

For the Manufacture of Cement Goods.

Brick Machines.

Roofing Tile Machines.

Concrete Hollow Block Machines.

Grinding and Polishing Machines.

Sand Washing Machines.

Presses.

Cement Board Machines.

Stone Crushers, Rolling Mills.

Machine Works—

Dr. GASPARY & Co.,

MARKRANSTÄDT (Germany).

Catalogue No. 102 free of charge.

The "Homester"

**MOST UP-TO-DATE PORTABLE
COOKING RANGE ON THE MARKET**

**NO
ADVANCE
IN PRICE**

NO EXTRAS

**OPEN
AND
CLOSE
FIRE.**

**CAST
IRON
PANEL
ENDS.**



	Width	24	26	28	30	32	34	36 inches.
R6020	Oven	10	12	12	14	14	16	16 "
Oven and Sham.	Fire	6	6	6	8	8	8	8 "
	Price	33/9	47/7½	43/6	45/9	47/3	48/9	51/- per set.

HOT PLATE, 16½ inches deep by 24½ inches high.
Prices include 2 ft. Smoke Pipe and Covering Plate.

	Width	30	32	34	36 inches.
R6021	Oven	12	12	14	14 "
Oven and Boiler	Fire	8	8	8	8 "
with Brass Tap, as drawn.	Price	51/9	53/7½	57/9	59/7½ per set.

LARGE STOCKS.

PROMPT DELIVERY.

Liberal Discount quoted to the Trade on application to (B.J. Dept.)

**YOUNG & MARTEN, LTD., STRATFORD,
LONDON, E.**

THE Master Builders' Handbook

Issued by the London Master Builders' Association.

A Compendium of Practical
Information.

Invaluable to all interested in
the Building Industry, either
professionally or practically.

An Office Guide or pocket
companion to the busy man
—a copious Index affording
an instant clue to every item
in the book.

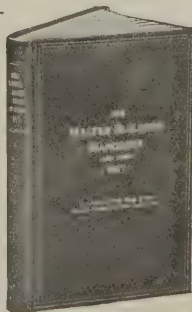
Neatly bound in cloth covers.

PRICE 1/- nett.

Post free 1/3.

To be obtained from the Publishers,

Technical Journals, Ltd., Caxton
House, Westminster, S.W.



THE SECOND EDITION OF English Ecclesiastical Architecture

13 in. x 8¾ in., bound full cloth. 250 pages.

Ecclesiastical Architecture, more especially Gothic, offers many pitfalls to the designer. In the old work there is a subtle quality which is very difficult to achieve in church buildings of the present day. It demands from the architect not only a thorough knowledge of the constructional fitness which is the basis of Gothic, but also a keen sense of proportion, and a fertility of invention in the design of detail.

English Ecclesiastical Architecture, like English Domestic Architecture, has great traditions, and it is fortunate that there should exist a school of men among English architects who possess the ability to produce work of the highest character. The ecclesiastical buildings of the prominent exponents of the Gothic Revival—Pugin, Scott, Butterfield, and the rest—have already been fully illustrated, but never before has there been brought together a representative series of photographs of the recent work of English church architects. The value of this present collection therefore is self-evident. Examples of the best modern church work are included, and the volume is fully representative of what is being done by the chief architects of the present day, including buildings of Renaissance character as well as Gothic. The illustrations are from specially-taken photographs reproduced to a large size.

PRICE 10/6 nett.

POST FREE INLAND.

Orders should be sent to The Manager,

TECHNICAL JOURNALS, LTD.,
CAXTON HOUSE, WESTMINSTER, S.W.

UNIVERSITY OF ILLINOIS-URBANA



3 0112 076145066